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DEPARTMENT OF THE INTERIOR

HUBERT WORK, SECRETARY

BUREAU OF RECLAMATION

DAVID W. DAVIS, Commissioner

Clemson University
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TWENTY-SECOND ANNUAL REPORT

OF THE

BUREAU OF RECLAMATION

Transmitted to Congress in pursuance of the
Act of June 17, 1902 (32 Stat. 388)

1922–1923

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LETTER OF TRANSMITTAL.

DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
Washington, August 30, 1923.

The SECRETARY OF THE INTERIOR.

DEAR MR. SECRETARY: There is submitted herewith a manuscript for the twenty-second annual report of the Bureau of Reclamation covering the fiscal year ending June 30, 1923. I took office as commissioner only 10 days before that date and hence the attached report covers a period of operations with which I had little or nothing to do. The call upon field offices for contributions to this report had been sent out and the resulting material largely brought together before my appointment.

In view of all the circumstances, it seems fitting to submit this material as thus prepared. Later I may have occasion to submit a special report prepared more completely under my own direction.

Respectfully,

D. W. DAVIS, *Commissioner.*

TWENTY-SECOND ANNUAL REPORT

OF THE

BUREAU OF RECLAMATION.

GENERAL DISCUSSION.

During the past fiscal year, which ended on June 30, 1923, the irrigation projects of the Bureau of Reclamation were still suffering from the general depression in agriculture. However, the prices received by the farmers for their crops were beginning to be more favorable, and as a consequence there was a somewhat more optimistic attitude on the part of the water users than has prevailed for the past few years.

Increased interest was shown in the building up of the dairy herds on many of the projects and thus utilizing to advantage the large acreage in alfalfa by a concentration of products. Several new creameries and cheese factories were started or planned and the outlook for this branch of agricultural industry was particularly favorable. As a rule farmers on those projects where fruit is the principal crop made some money, and were in a generally satisfactory condition financially. Similarly, in the case of growers of sugar beets, the cash prices received for this crop, augmented by the bonuses paid later by the sugar companies, based on the sugar content of the beets and the price of refined sugar, aided materially in producing a more optimistic outlook. On the other hand the general slump in the price of potatoes was a marked deterrent to the forward movement and resulted in considerable hardship on a number of the projects, where this was one of the principal crops. However, many farmers capitalized the situation by fattening hogs for market on an otherwise unmarketable product.

More than 450,000 persons are living on the 33,000 farms irrigated by the bureau and in the project towns and cities. Of the 3,000,000 acres comprised in the 25 project constructed or under construction by the bureau, water was furnished in 1922 to 1,202,130 acres. Of this area 1,169,100 acres were cropped in that year, producing crops having a gross value of more than $50,000,000, or an average of about $43 per acre. Additional lands, largely included in private or district projects and receiving a supplemental water supply under the Warren Act from the works of the bureau, yielded crops having a gross value of $33,000,000 more. The accompanying table shows the irrigable, irrigated, and cropped acreage, and the value of crops grown on the projects of the bureau during the past several years:

Irrigable, irrigated, and cropped acreage, and crop value.

Year.	Irrigable acreage.	Irrigated acreage.	Cropped acreage.	Crop value.
1913	1,181,362	694,142	637,227	$15,676,411
1914	1,240,875	761,271	703,424	16,475,517
1915	1,330,222	814,906	757,613	18,164,452
1916	1,405,452	922,821	858,291	32,815,972
1917	1,502,468	1,026,663	966,784	56,462,313
1918	1,601,934	1,119,566	1,051,193	66,821,396
1919	1,636,159	1,187,255	1,113,469	88,974,137
1920	1,661,960	1,225,480	1,153,820	66,171,650
1921	1,674,100	1,227,500	1,157,900	49,620,300
1922	1,692,700	1,202,130	1,169,100	50,360,850

The total estimated gross value of crops raised on these projects since water was first available for irrigation, exclusive of those served under the Warren Act, is more than $500,000,000.

In general the percentage distribution of the acreages of the principal crops grown on the projects, as shown by the crop census, follows rather closely that of the previous year. There was a slight decrease in the percentage of the total acreage represented by the cereals, grain and seed, and hay and forage; and increases in the percentages represented by vegetables and truck, fruit and nuts, and miscellaneous crops. Among the latter the largest increase was in cotton, which advanced during the year from 9 per cent to 12.6 per cent of the total cropped acreage. There was also a material increase in the acreage of white potatoes, which doubtless intensified the serious situation on many projects following the decline in price of this crop.

As in the previous year, alfalfa led all other crops both in point of acreage and value, followed by wheat from the standpoint of acreage, and by cotton and cottonseed from that of value. Apples, although representing only a small percentage of the acreage, stood third in value of the crop.

REORGANIZATION OF THE WORK.

Shortly after assuming office, the Secretary of the Interior came to the conclusion that more attention should be paid to aiding and cooperating with the settlers along business and agricultural lines if the projects were to be a complete success. With this idea in view, he appointed Miles Cannon, former commissioner of agriculture of the State of Idaho, to the post of field reclamation commissioner, with headquarters to be later established in one of the Western States; and shortly before the close of the fiscal year abolished the position of director of the Reclamation Service, and appointed David W. Davis, former governor of Idaho, to the position of Commissioner of the Bureau of Reclamation, with headquarters in Washington, D. C.

The purpose of these appointments was to improve the reclamation projects along business and agricultural lines, and to coordinate various agricultural activities; to aid the farmers in raising better and more diversified crops, and in applying modern business methods in handling, marketing, and realizing upon the crops produced; to effect economies wherever possible; and in every way to improve not only the condition of the water users on the projects, but the administration of the projects by the Department of the Interior.

At Denver, under the chief engineer, is a force of technical men for the design of the principal engineering structures, including work of an electrical nature. That is the headquarters point for extensive purchases; and the chief engineer and his two assistants alternate in charge of the office and traveling from one project to another to maintain close administration and give prompt advice and decision on engineering and other details.

Each project is in administrative charge of a project manager. The project force includes the necessary engineers, clerical help, and operatives such as gate tenders, ditch riders, and water masters for the work of constructing, operating, and maintaining the irrigation systems, with sufficient common and skilled labor for the work in hand.

The legal work of the Bureau of Reclamation both in the Washington office and in the field is in charge of the chief counsel. There are eight field offices of the legal division located, respectively, at Denver, Colo.; Montrose, Colo.; Mitchell, Nebr.; Helena, Mont.; Boise, Idaho; Portland, Oreg.; San Francisco, Calif.; and Las Cruces, N. Mex. The attorneys in charge of these offices are the legal advisers to the various project managers located within their respective districts. In the central Denver office is located a district counsel who is legal adviser to the chief engineer.

On June 30, 1923, the force of the Bureau of Reclamation comprised 4,435 persons, subdivided as follows: Educational, 515; registered, 1,293; laborers, 2,627. In addition, the employees of contractors working on reclamation projects numbered 251.

THE LENIENCY ACT.

Owing to the continued depressed condition of agriculture Congress amended the act of March 31, 1922, by the passage of the act of February 28, 1923 (Public No. 454), the two acts together being known as the leniency act. This law applies to all Federal irrigation projects constructed or being constructed under the reclamation law, and permits three classes of relief to the settlers, namely: (*a*) Extension of time of payment of construction charges due in 1922 or prior thereto to any date not beyond December 31, 1924; (*b*) the furnishing of irrigation water during the season of 1923, notwithstanding a delinquency of more than one year in the payment of any operation and maintenance or construction charges; and (*c*) the distribution of accrued operation and maintenance and construction charges for the year 1922 and prior thereto, over the period covered by the remaining construction installments, in those cases where the water users are unable to pay such accrued charges on or before December 31, 1924.

At the close of the fiscal year 1,067 applications under the act had been received at the Washington office of the Bureau of Reclamation, and it was estimated that the total number of applications would amount to about 3,350.

PROJECT LAND IRRIGABLE BUT NOT IRRIGATED.

Recent crop censuses have shown an area of about 450,000 acres on the projects listed as irrigable, but not irrigated. It was known in a general way that this acreage comprises land that is being put to some profitable use, although not irrigated, and land lying idle. In the first class is land occupied by buildings, corrals, roads, etc.; land cultivated or pastured without irrigation; and land profitably used in other ways. On the other hand are small acreages of public land awaiting entry and tracts of State, railroad, and Indian lands in process of subdivision and settlement; land temporarily withheld from settlement for a seasoning of the canals or for some other reason; land which has become seeped; land in process of being reclaimed by a new settler who has not the means to cultivate his entire acreage; and land held by nonresident owners which is not being irrigated or cropped or put to other profitable use.

During the fiscal year effort was made to secure more definite information concerning this comparatively large area of irrigable but not irrigated land, and the results are shown in the accompanying summary table.

Classification of irrigable but not irrigated land on projects.

Class.	Acreage.	Per cent.
Occupied by farm buildings, schools, canals, laterals, roads	85,712	19.0
Overflowed, seeped, and alkalied	34,441	7.6
Rough and slough lands	11,195	2.5
Largely in pasture and summer fallow	26,138	5.8
Not farmed for financial and other reasons	99,857	22.0
Cultivated, but not irrigated owing to wet season, or dry farmed	55,569	12.3
Private holdings not developed; excess land	41,515	9.2
Nonresident ownership	42,003	9.3
State, railroad, and Indian lands	11,921	2.6
Public land withdrawn and unentered	43,873	9.7
Total	452,224	100.0

The table shows that of the total area of 452,224 acres 167,419 acres, or 37.1 per cent, comprising land occupied by buildings, canals, etc.; land in pasture and summer fallow; and land dry farmed, were in profitable use; whereas 284,805 acres, or 62.9 per cent, were not being used for the cultivation of crops or in other profitable manner. It may be safe to assume that the 99,857 acres of land not farmed for financial or other reasons were held out of cultivation largely because of the agricultural depression of the past two years and that much of this will be brought into cultivation with more prosperous conditions. Of the 184,948 acres remaining, the largest element is represented by the 83,518 acres in private holdings not developed and in undeveloped land in nonresident ownership, Probably the formation of irrigation districts would force a large part of this land into cultivation and the settlement campaigns on the projects should also dispose of much of this land. The remaining 101,430 acres comprised overflowed, seeped, and alkalied land, much of which will presumably come into cultivation again with the extension of drainage; rough and slough lands, perhaps not worth the expense of developing; State, railroad, and Indian lands, and land withdrawn and unentered, the development of which will probably be gradual, depending on economic conditions and the intensity of the demand for farms. Most of the unentered farm units available are the culls from previous openings and are not particularly attractive, but with the settlement campaigns being conducted on a number of the projects, these should be gradually taken up by men with the means to bring them into a state of production.

PROJECT OPERATIONS.

During the fiscal year construction and operation and maintenance of irrigation and drainage works were continued.

In Arizona the water users' association, operating the Salt River project, sold a bond issue of $1,800,000 and began work on a 200-foot dam at Morman Flats and completed installation of gates in the spillways at Roosevelt Dam, thus increasing the storage capacity by 270,000 acre-feet. They also extended the drainage system and completed enlargement of 4 miles of the Eastern Canal, besides contributing $116,000 toward the $550,000 cost of the Cave Creek flood-control dam, which has been completed. During the year the new South Consolidated power plant was 50 per cent completed and the county completed 310 miles of concrete paved roads largely within the project at a cost of $8,000,000.

The Yuma project is partly in Arizona and partly in California. Construction work on the project proper was largely confined to the drainage system, which was extended to seeped areas needing relief. The Valley drainage pumping plant was extended by the installation of one additional screw pump which, together with one of the old pumps, was equipped for electric operation. Power was being obtained from the Southern Sierra power station pending construction of a project power plant. In order to deliver the power to the drainage pumps a transmission line was built from the B lift of the Yuma Mesa irrigation system. Lands on the Yuma Mesa for which it was possible to construct pumping and irrigation works with the funds made available under the act of January 25, 1917, were furnished water with power temporarily secured from the Southern Sierra power system, pending the payment of sufficient charges to construct a project power plant.

The Orland project, California, continued its record of no delinquencies, the water users' association remitting in full the amounts of both the installment of the building charge and the minimum operation and maintenance charge on the due dates. Lining of 9 miles of laterals with concrete constituted the chief construction feature and the installation of an additional auxiliary gate at East Park Dam was the only unusual item of maintenance.

The Grand Valley project, Colorado, has been completed far enough to serve 30,000 acres in the gravity division and water was being furnished on a rental basis. Construction work on this division was limited to building a few lateral extensions and digging drains required to maintain the productivity of the lands under irrigation. The most important construction work in progress was the reconstruction of the irrigation system of the Orchard Mesa irrigation district. This is a private system, consisting largely of wooden structures which were about to fail, which was taken over as a division of the project and will be rehabilitated at a cost of approximately $1,000,000.

The Uncompahgre project, Colorado, was operated under public notice. Construction work comprised the enlargement and extension of private laterals turned over to the United States, and the installation of necessary minor structures.

The Boise project, Idaho, was operated under public notice. With the operation and maintenance cost there was levied, under court decree, a special drainage assessment, which was being used in constructing drains on the western end of the project. As large amounts of this and previous assessments remained unpaid the drainage work was handicapped, although urgently needed. The construction of the Black Canyon Dam in the Payette River was begun in July, 1922. This dam will divert water for canals of the Emmett irrigation district and will be available for diversion for lands of the Black Canyon irrigation district.

On the King Hill project, Idaho, the construction work covered by contract with the King Hill irrigation district was completed. The irrigation system, which has been entirely rebuilt to convey water to approximately 17,000 acres lying within the district boundary, was operated by the United States, under special contract with the district providing for operation of the completed works until November 1, 1923.

On the Minidoka project, Idaho, the Gravity division was operated under contract by an irrigation district. The Pumping division was operated by the Government. For many years the extension of the project by pumping onto a fine tract of land north and west of the Gravity division has been contemplated. This requires large storage facilities to provide the necessary water supply. A large number of the canal systems already in service under private and district management also require stored water to protect their lands in years of drought. Investigation of the reservoir site at American Falls demonstrated that it is of sufficient capacity to care for the needs of the Government and other lands. A plan of cooperation was worked out by which the operating companies will pay their share of the cost of constructing storage as the work progresses. Two irrigation districts have already made large payments; three other districts, one of them including five canal companies with 400,000 acres, have signed contracts. A contract has been negotiated with the Idaho Power Co. for the necessary portion of their conflicting rights at American Falls.

The Huntley project, Montana, was under operation by the United States, pending decision of the newly organized irrigation district to assume this work on behalf of the water users.

The Milk River project, Montana, is still on a rental basis. A board of review examined the project and made report in the fall of 1922, subsequent to which steps were taken looking to the formation of irrigation districts and making contracts between the districts and the United States. Current construction comprised the completion of Nelson Reservoir enlargement to a capacity of 66,800 acre-feet, some lateral extension work, and a small amount of drainage construction.

On the Sun River project, Montana, the Greenfields division lateral system was being extended to cover about 14,000 acres, making a total of 40,000 acres under constructed canals. Before further extensions are made, it will be necessary to enlarge the main canal and construct storage works. The construction of subsurface drains for the relief and protection of seeped and threatened areas was in progress and 5 miles of open drains had been completed. A section 1,700 feet long, where leaks and slides had given considerable trouble on the Greenfields Main Canal, was improved by placing a diaphragm of rag felt and tar between two 3-inch layers of reinforced concrete. The Fort Shaw division canal system was operated, but no construction work was in progress, and the water users had not completed arrangements necessary before beginning the construction of drainage works for the relief of about 2,500 acres of seeped land.

The Lower Yellowstone project is partly in Montana and partly in North Dakota. Construction was limited to lateral extensions and miscellaneous small structures, which work was practically completed. An extensive program of silt removal from the main canal by drag line was under way. Drainage is much needed.

The North Platte project is partly in Nebraska and partly in Wyoming. The Interstate division was being operated under public notice. The Fort Laramie division on the south side was practically completed through Wyoming and may be completed in Nebraska during 1925. During the year the Wyoming portion of the Fort Laramie division, about 50,000 irrigable acres, was organized into

an irrigation district, a large part of which was furnished water under rental contracts. The Nebraska portion, now under construction, was organized into an irrigation district in 1919 and contract entered into with the United States on May 25, 1920. The Northport division, occupying the most easterly portion of the north side irrigated area, was organized as a district in 1918, completed in 1922, and a part furnished water under rental contracts.

The Newlands project, Nevada, was operated under public notice for irrigation of lands in the Truckee and Carson divisions. Contemplated storage of Truckee River water in the proposed Spanish Springs Reservoir will provide water for extensions to include the Pyramid and Lovelock divisions and additional lands in the Truckee division. Surveys for right of way and other purposes in connection with this reservoir were in progress and right of way was being acquired. The Lahontan Reservoir, already built, serves Carson division lands. Excellent progress was made in constructing drains under a contract with the Truckee-Carson irrigation district.

The Carlsbad project, New Mexico, was operated under public notice. Investigations for the proposed extension of the project area were completed and report made in May, 1923. Field work looking to the adjudication of the waters of the Pecos River watershed was completed.

The Rio Grande project, New Mexico-Texas, was being operated pursuant to contracts with the Elephant Butte irrigation district for 83,000 acres of irrigable land in New Mexico, and with the El Paso County Water Improvement District No. 1 for 67,000 acres of irrigable land in Texas. In accordance with treaty provisions 60,000 acre-feet of water are supplied annually to lands in Mexico. During 1922 the first assessment of construction charges was collected, being 2 per cent on $90 per acre on approximately 50,000 acres in the New Mexico portion of the project and 33,000 in the Texas portion. The storage and main diversion features were practically complete. A comprehensive system of deep drains was nearing completion, as well as the reconstruction and extension of the distribution system. The old community ditch systems were taken over and incorporated as far as practicable into the distribution system. Construction activities were equally divided between drainage and the distribution systems. The last project diversion, the Tornillo Canal heading, was constructed.

On the Williston project in North Dakota a power plant was being operated in connection with the irrigation of lands by pumping from the Missouri River This development is still largely experimental, as the farmers have not yet demonstrated their ability to pay high pumping costs involved even when aided by sale of power for commercial purposes. An extension of the experiment was authorized by approval of a form of contract, extending repayment of costs and providing for equalization of the charges over a 10-year period.

The Umatilla project, Oregon, was operated by the Government. Contracts were being negotiated with the Stanfield irrigation district and the Westland irrigation district for a supplemental water supply to be furnished from the proposed McKay storage reservoir. Preparations were being made to acquire the site and begin construction of the dam, which is to be located 8 miles south of Pendleton.

The Klamath project, partly in Oregon and partly in California, was operated under public notice. Construction of the distribution system for about 10,000 acres uncovered in the Tule Lake area was completed, and public notice was issued, but afterwards suspended pending analysis of the announced construction charge. The Lost River diversion dam, and canals for irrigation of about 8,400 acres in the Langell Valley and Horsefly districts, with water from Clear Lake Reservoir, were under construction. Investigation of the Gerber, formerly known as the Horsefly, dam site on Miller Creek, was completed and negotiations for right of way required were in progress. The drainage system was extended to lands showing damage from seepage.

On the Belle Fourche project, South Dakota, important progress was made by the organization of the Belle Fourche irrigation district to replace the Belle Fourche Valley Water Users' Association. The district was declared organized on March 12, 1923, by order of the board of county commissioners of Butte County.

The Strawberry Valley project, Utah, has been completed. The water users under irrigation districts and corporate organizations operate and maintain the canal and lateral systems and distribute water to the individual. The United States operates and maintains the storage works, power plant, and related works, and measures and delivers in bulk the project water supply to the headgates of the distributing canals. The irrigators were negotiating to take over the care, operation, and maintenance of the part of the irrigation works operated by the United States.

The Okanogan project, Washington, was operated under public notice. The project has suffered to a considerable extent from a shortage of water for several years past on account of light snow falls, in spite of which it holds the record for the highest acreage values produced on any project of the bureau. The reservoir capacity has been enlarged and pumping plants provided to increase the water supply.

The Yakima project, Washington, has been operated by the bureau for a number of years under public notice. In addition about 70,000 acres on the Yakima Indian Reservation are served with water from the reservoirs of the bureau, of which there are five in operation. A sixth, the Tieton Reservoir, is being constructed on the Tieton River. The Sunnyside division has been extended by the construction of the Granger siphon to irrigate about 1,600 acres of land in the Granger irrigation district. This siphon will be in operation beginning with the irrigation season of 1924. It is about 13,000 feet long and is built of 33-inch diameter reinforced concrete, lock-joint pipe. Investigations, surveys, and estimates have been completed for four new divisions, known as the Roza, Moxee, Kennewick, and Kittitas, comprising a total of 200,000 acres. All these divisions are organized as irrigation districts under the State law, and have made contracts with the United States for the purchase of their irrigation water supply.

The Riverton project, Wyoming, was under construction. The diversion dam and excavation of the upper portion of the main canal had been completed, and work was in progress on main canal structures.

The Shoshone project, Wyoming, as thus far constructed furnishes water to 71,000 acres under public notice on the Garland and Frannie divisions. Sixty per cent of this area was irrigated in 1922. The Willwood diversion dam had been practically completed and work was under way on the construction of the canal and lateral systems which will supply water to approximately 17,600 acres on the Willwood division. Most of this division is public land and will be opened to entry upon the completion of the construction work. Drainage work was being carried on under supplemental construction agreements on both the Garland and Frannie divisions.

The Blackfeet (Indian) project, Montana, was operated on a water-rental basis. On the Badger-Fisher division minor timber structures were placed on the lateral system. About 2 miles of Four Horns Reservoir outlet canal were excavated and on this canal 2 concrete drops and 4 minor timber structures were placed. Four divisions of the project were operated in 1922.

On the Flathead (Indian) project, Montana, construction work completed has provided the canal and lateral systems for the irrigation of 105,000 acres of land, but with incomplete storage, out of a total of 124,500 acres irrigable for the completed project. The work for the past year was principally on storage features, the principal works in course of construction being the Hubbart Dam to provide additional storage on the Little Bitterroot River for the Camas division; the Tabor feed canal to bring water from the Jocko River into Tabor Reservoir for the Mission Valley division, and the enlargement of the Ninepipe Reservoir to provide additional storage capacity for the lands of the Mission Valley division.

The Fort Peck (Indian) project, Montana, was operated in four units, Big Porcupine, Little Porcupine, Poplar, and Big Muddy, for a total of about 23,000 acres of irrigable land. Partial storage for the project has been secured in Big Porcupine, Little Porcupine, and Medicine Lake Reservoirs, amounting to a total of 17,620 acre-feet.

Irrigation and crop results, Government reclamation projects, 1922.[1]

State and project.	Lands on projects proper covered by crop census.					Other lands served by Government works, usually a partial water supply through private canals under Warren Act contracts.					
				Crop value.					Crop value.		Approximate percentage of total water used supplied by United States.
	Irrigable acreage.[2]	Irrigated acreage.	Cropped acreage.[3]	Total.	Per acre.	Irrigable acreage.	Irrigated acreage.	Cropped acreage.	Total.	Average per acre.	
Arizona: Salt River [4]	213,170	[5] 203,330	191,920	$12,898,050	$67.20						
Arizona-California: Yuma	63,200	53,970	53,970	2,682,500	49.70	4,000	1,800	1,400	$49,000	$35.00	100
California: Orland	20,670	15,120	11,800	565,560	47.92						
Colorado:											
Grand Valley	30,000	12,370	11,840	365,760	30.88	8,350	7,900	7,800	600,000	77.00	100
Uncompahgre	97,410	64,730	61,700	1,550,900	25.14	600	550	550	20,580	37.40	
Idaho:											
Boise	143,000	112,000	108,500	3,992,600	36.80	140,280	131,300	126,900	4,596,750	36.22	24.4
King Hill [6]	13,650	6,440	6,050	219,900	36.33						
Minidoka	121,560					630,000	580,000	560,000	14,865,000	26.55	16
Gravity division [7]		60,300	57,520	1,563,310	27.18						
Pumping division		45,290	42,290	1,456,040	34.43						
Montana:											
Huntley	32,000	19,520	19,520	572,700	29.33						
Milk River [8]	66,500	18,170	18,150	202,110	11.14	33,900	28,200	25,000	388,400	15.50	
Sun River	42,470										
Fort Shaw division		8,110	7,470	114,840	15.38						
Greenfields division [9]		12,420	15,800	265,850	16.82						
Montana-North Dakota: Lower Yellowstone [10]	40,200	15,600	15,400	334,100	21.68						
Nebraska-Wyoming:											
North Platte	162,240					122,400	98,800	95,400	3,482,300	36.50	45
Interstate division		87,300	86,400	1,878,450	21.74						
Fort Laramie division		20,300	20,100	312,040	15.42						
Northport division		3,650	3,450	72,520	21.05						
Nevada: Newlands	73,750	44,960	42,390	1,849,710	[11] 51.59						
New Mexico: Carlsbad	25,000	24,080	22,430	1,197,980	53.41						
New Mexico-Texas: Rio Grande	116,000	89,590	84,410	4,479,670	53.06	([12])					
North Dakota: Williston	7,650	1,590	1,570	52,230	33.26						
Oregon: Umatilla	24,590	13,270	12,390	486,260	39.24						
Oregon-California: Klamath	51,000	36,000	32,950	537,140	16.30	[13] 10,000	9,000	9,000	184,360	20.00	
South Dakota: Belle Fourche	82,190	[14] 31,150	56,920	585,770	10.29						
Utah: Strawberry Valley	53,890	30,820	30,340	892,550	30.00	1,000	880	860	12,300	15.00	

Washington:												
Okanogan	8,000	5,570	4,840	1,607,140	332.00	151,170	124,860	124,360	9,042,150	73.00	63	
Yakima												
Sunnyside division	101,340	95,000	80,760	6,309,920	78.13							
Tieton division	32,000	28,700	26,400	2,528,830	95.80							
Wyoming:												
Shoshone	71,220											
Garland division		32,720	32,400	664,320	20.50							
Frannie division		10,060	9,420	122,100	12.96							
Total	1,692,700	1,202,130	1,169,100	50,360,850	43.08	1,101,700	983,290	951,270	33,240,840	35.00		

[1] Data are for calendar year (irrigation season), except on Salt River project, where data are for corresponding "agricultural year," October, 1921, to September, 1922.
[2] Areas Bureau of Reclamation was prepared to supply water.
[3] Irrigated crops. Excludes small areas on few projects cropped by dry farming.
[4] Data furnished by Salt River Valley Water Users' Association, which operates the project.
[5] Includes 5,536 acres reported as vacant, 3,032 acres of "home tracts," and 2,842 acres within town sites, on which no crops were reported.
[6] Data furnished by King Hill irrigation district. The project was built under private auspices and is under reconstruction by the United States.
[7] Data furnished by Minidoka irrigation district, which operated the division.
[8] Crop reports covered an additional area of 14,160 acres cropped by dry farming, producing crops worth $138,640, or $9.79 per acre.
[9] Figures are for 186 irrigated farms, which included small tracts farmed without irrigation.
[10] Crop reports covered an additional area of 13,290 acres cropped by dry farming, producing crops worth $157,940, or $11.88 per acre.
[11] For crops in full production, excluding 6,402 acres of wild-grass pasture and 1,118 acres otherwise not in full production. For all crops, $43.63.
[12] Data not available; substantial area in Mexico is irrigated with water supplied from project works under treaty.
[13] Does not include portion of exposed Tule Lake bed temporarily leased and cropped with subirrigation, but not supplied with irrigation works.
[14] Owing to wet year only about half of land in crops received irrigation water.

Summary of crop reports on reclamation projects in 1922.

NOTE.—These figures are limited to irrigated crops covered by crop census on Government projects proper, excluding dry-farm crops and all crops in most areas served stored water under the Warren Act.

Crop.	Acreage cropped.		Yields.			Crop value.		
	Total.	Per cent of cropped acreage, all crops.	Unit.	Total.	Average per acre.	Average per acre.	Total.	Per cent of total value of all crops.
Cereals:								
Barley	32,272	2.8	Bushels	1,044,294	32	$19.06	$615,263	1.2
Corn	53,732	4.6	do	1,511,781	28	16.70	897,595	1.8
Oats	42,030	3.6	do	1,231,553	29	14.86	624,751	1.2
Rye	1,263	.1	do	12,990	10	6	7,369	.....
Wheat	159,573	13.6	do	3,790,734	24	21.41	3,417,624	6.8
Total	288,870	24.7	.....	7,591,352	26	19.26	5,562,602	11
Other grain and seed:								
Alfalfa seed	21,557	1.9	Bushels	70,196	3.2	28.72	619,229	1.2
Clover seed	9,657	.8	do	47,191	5	39.50	381,485	.8
Grain sorghum	22,795	1.9	do	815,675	36	25.60	583,343	1.2
Flaxseed	290	.....	do	1,521	5.3	10.40	3,006	.....
Millet seed	87	.....	do	1,011	11.62	15.17	1,320	.....
Total	54,386	4.6	.....	935,594	17.20	29.20	1,588,383	3.2
Hay and forage:								
Alfalfa hay	448,446	38.4	Tons	1,343,730	3	32.30	14,486,634	28.8
Clover hay	10,770	.9	do	18,180	1.7	12.17	131,074	.3
Other hay	22,180	1.9	do	27,057	1.2	10.49	232,657	.5
Corn fodder	4,120	.4	do	15,278	3.7	16.71	68,866	.1
Other forage	3,713	.3	do	18,640	5	32.07	119,095	.2
Pasture	107,203	9.1	.....	.....	.....	10.98	1,176,693	2.3
Total	596,432	51	.....	.....	.....	27.20	16,215,019	32.2
Vegetables and truck:								
Beans	4,102	.4	Bushels	58,589	14	44.76	203,610	.4
Onions	1,502	.1	do	386,397	257	113	169,648	.3
Potatoes, white	78,507	6.7	do	15,295,941	195	46	3,596,624	7.1
Potatoes, sweet	856	.....	do	113,440	133	142	121,358	.2
Truck	23,510	2	.....	.....	.....	125.70	2,955,304	6
Total	108,477	9.2	.....	.....	.....	65	7,046,544	14
Fruits and nuts:								
Apples	26,747	2.3	Pounds	228,695,670	8,550	187	5,008,788	10
Peaches	1,997	.1	do	19,243,950	9,636	200	399,436	.8
Pears	4,201	.4	do	18,639,370	4,437	98	409,559	.8
Prunes	1,236	.1	do	9,051,900	7,324	132	163,324	.3
Citrus fruits	2,278	.2	do	14,972,000	6,572	328	745,540	1.5
Small fruit	2,156	.2	do	11,832,720	5,490	308	664,545	1.3
Miscellaneous	2,901	.3	do	6,551,360	2,258	108	312,945	.6
Total	41,516	3.6	.....	308,986,970	7,442	185	7,704,137	15.3
Miscellaneous:								
Sugar beets	29,654	2.6	Tons	346,627	11.7	75	2,223,628	4.4
Cotton	147,640	12.6	Pounds	13,474,500	91.5	67	9,743,728	19.3
Cottonseed				87,211,180	592			
Cane	2,636	.2	Tons	6,695	2.5	27.70	73,030	.1
Other crops	6,415	.6	.....	.....	.....	31.76	203,779	.5
Total	186,045	16	.....	.....	.....	65.81	12,244,165	24.3
Duplication	106,626	9.1	.....	.....	.....	.....	.....	.....
All crops	1,169,100	100.0	.....	.....	.....	43.08	50,360,850	100.0

Settlement data, Bureau of Reclamation projects, 1922.

State and project.	Farms.		Towns.		Number of schools.
	Number.	Population.	Number.	Population.	
Arizona: Salt River	5,000	36,000	14	44,000	60
Arizona-California: Yuma	1,216	4,200	6	6,700	20
California: Orland	968	2,275	1	1,700	10
Colorado:					
Grand Valley	387	1,134	6	11,246	24
Uncompahgre	1,624	6,149	3	7,450	27
Idaho:					
Boise	3,559	14,236	8	36,170	28
King Hill	175	599	4	2,052	6
Minidoka	2,451	8,301	6	8,170	22
Montana:					
Huntley	590	1,682	8	673	8
Milk River	209	651	15	7,100	38
Sun River	393	978	4	401	17
Montana-North Dakota: Lower Yellowstone	575	1,591	8	2,805	13
Nebraska-Wyoming: North Platte	1,710	5,682	22	20,800	67
Nevada: Newlands	778	2,450	5	2,500	11
New Mexico: Carlsbad	333	1,580	4	3,440	10
New Mexico-Texas: Rio Grande	3,534	11,267	34	110,442	49
North Dakota: Williston	73	212	2	4,500	6
Oregon: Umatilla	558	1,613	4	1,280	6
Oregon-California: Klamath	570	2,200	5	6,200	22
South Dakota: Belle Fourche	1,035	2,213	5	2,386	24
Utah: Strawberry Valley	2,741	6,500	12	16,000	23
Washington:					
Okanogan	445	1,363	3	2,300	6
Yakima-Sunnyside	3,138	12,332	11	7,250	41
Tieton	1,300	3,542	8	23,000	10
Wyoming:					
Riverton	.....	.....	2	2,500	2
Shoshone	914	2,444	5	1,585	7
Total	34,276	131,194	205	332,650	557

State and project.	Number of churches.	Banks.			
		Number.	Capital stock.	Deposits.	Number of depositors.
Arizona: Salt River	65	20	$1,755,500	$21,331,600	39,500
Arizona-California: Yuma	24	5	280,000	3,095,800	6,382
California: Orland	7	2	171,000	995,000	2,900
Colorado:					
Grand Valley	28	7	468,700	3,520,500	8,825
Uncompahgre	27	7	550,100	2,930,700	11,250
Idaho:					
Boise	56	16	2,741,000	16,707,000	30,000
King Hill	5	1	20,000	275,000	800
Minidoka	29	5	180,000	1,100,000	5,000
Montana:					
Huntley	7	2	50,000	156,000	810
Milk River	25	23	843,000	4,350,000	12,000
Sun River	11	3	71,500	158,000	740
Montana-North Dakota: Lower Yellowstone	15	7	200,000	1,425,000	4,475
Nebraska-Wyoming: North Platte	47	26	810,000	6,579,600	1,160
Nevada: Newlands	8	1	75,000	680,700	1,700
New Mexico: Carlsbad	12	3	225,000	1,106,300	2,374
New Mexico-Texas: Rio Grande	110	13	2,950,000	30,000,000	31,000
North Dakota: Williston	7	2	185,000	1,700,000	3,500
Oregon: Umatilla	9	1	25,000	300,000	1,200
Oregon-California: Klamath	10	5	255,000	3,500,000	8,000
South Dakota: Belle Fourche	9	9	250,000	2,606,200	6,500
Utah: Strawberry Valley	25	6	285,000	1,900,000	10,000
Washington:					
Okanogan	8	5	155,000	956,000	2,250
Yakima-Sunnyside	30	12	400,000	3,000,000	12,000
Tieton	4	.....	.....	.....	.....
Wyoming:					
Riverton	7	5	135,000	1,000,000	2,200
Shoshone	8	4	100,000	441,000	2,400
Total	593	190	13,180,800	109,804,400	206,966

SUMMARY OF CONSTRUCTION RESULTS, JUNE 30, 1923.

Items.	To June 30, 1923.	To June 30, 1922.	Increase.
Reservoir capacity available (original)	*Acre-feet.* 10,038,698	*Acre-feet.* 9,679,798	*Acre-feet.* 358,900
CANALS DITCHES AND DRAINS.	*Miles.*	*Miles.*	*Miles.*
Canals over 800 second-feet capacity	511	506	5
Canals 301 to 800 second-feet capacity	686	678	8
Canals 50 to 300 second-feet capacity	2,185	2,086	99
Canals less than 50 second-feet capacity	8,729	8,310	419
Total canals	12,111	11,580	531
Waste-water ditches	931	809	122
Drains, open	1,236	1,015	221
Drains, closed	196	189	7
Total	2,363	2,013	350
Grand total	14,474	13,593	881
TUNNELS.			
Number	103	101	2
Length (feet)	145,810	145,436	374
STORAGE AND DIVERSION DAMS.	*Cubic yards.*	*Cubic yards.*	*Cubic yards.*
Masonry	2,151,361	2,102,463	48,898
Earth	11,935,701	11,102,524	833,177
Rockfill and crib	1,416,133	1,285,589	130,544
Total	15,503,195	14,490,576	1,012,619

	To June 30, 1923.		To June 30, 1922.		Increase.	
DIKES AND LEVEES.	*Feet.*	*Cu. yds.*	*Feet.*	*Cu. yds.*	*Feet.*	*Cu. yds.*
Length and volume	757,305	5,002,681	649,397	4,719,186	107,908	283,495
	Concrete.	Wood.	Concrete.	Wood.	Concrete.	Wood.
CANAL STRUCTURES.	*Number.*	*Number.*	*Number.*	*Number.*	*Number.*	*Number.*
Costing over $2,000	1,305	218	1,207	209	98	9
Costing $500 to $2,000	2,874	869	2,675	762	199	107
Costing $100 to $500	14,120	8,968	12,705	7,826	1,415	1,142
Costing less than $100	25,524	71,624	23,186	68,887	2,338	2,737
Total	43,823	81,679	39,773	77,684	4,050	3,995
Grand total	125,502		117,457		8,045	
	Number.	Length.	Number.	Length.	Number.	Length.
BRIDGES.		*Feet.*		*Feet.*		*Feet.*
Steel	108	8,864	106	8,664	2	200
Combination	414	12,542	414	12,542	.....	.....
Wood	8,217	190,438	7,388	168,112	829	22,326
Concrete	354	4,838	352	4,664	2	174
Total	9,093	216,682	8,260	193,982	833	22,700
CULVERTS.						
Concrete	2,758	135,267	2,422	119,777	336	15,490
Metal	2,165	75,461	2,013	70,030	152	5,431
Terra cotta	1,901	76,777	1,705	69,537	196	7,240
Wood	4,189	101,801	4,189	101,801	.....	.....
Total	11,013	389,306	10,329	361,145	684	28,161
PIPE.	*Linear feet.*		*Linear feet.*		*Linear feet.*	
Concrete	806,851		770,823		36,028	
Metal	275,027		272,810		2,217	
Terra cotta (tile)	1,472,784		1,428,261		44,523	
Wood	602,136		532,240		69,896	
Total	3,156,798		3,004,134		152,664	

Summary of construction results, June 30, 1923—Continued.

Items.	To June 30, 1923.		To June 30, 1922.		Increase.	
	Number.	Length.	Number.	Length.	Number.	Length.
FLUMES.		*Feet.*		*Feet.*		*Feet.*
Concrete	99	66,294	98	65,121	1	1,173
Metal	1,260	196,991	1,148	185,067	112	11,924
Wood	2,455	482,890	2,419	477,258	36	5,632
Total	3,814	746,175	3,665	727,446	149	18,729
	Concrete.	Wood.	Concrete.	Wood.	Concrete.	Wood.
CANALS LINED.						
Length (miles)	394.20	4.12	378.50	4.12	15.70	.....
Total	398.32		382.62		15.70	
BUILDINGS.		*Number.*		*Number.*		*Number.*
Offices		99		99		0
Residences		715		715		0
Power plants		31		31		0
Pumping stations		167		165		2
Barns, storehouses, etc		561		561		0
Total		1,573		1,571		2
	Number.	Depth.	Number.	Depth.	Number.	Depth.
WELLS.		*Feet.*		*Feet.*		*Feet.*
Number and depth	585	58,028	556	52,821	29	5,207
COMMUNICATIONS.		*Miles.*		*Miles.*		*Miles.*
Roads		1,038		1,038		.....
Railroads		83		83		.....
Telephone lines		3,284		3,284		.....
Transmission lines		1,157		841		316
Total		5,562		5,246		316
POWER DEVELOPED.						
Water and steam horsepower		64,159		63,973		186
EXCAVATION.		*Cubic yards.*		*Cubic yards.*		*Cubic yards.*
Class 1, earth		194,715,455		180,226,211		14,489,244
Class 2, indurated material		11,819,395		11,248,053		571,342
Class 3, rock		9,484,994		9,103,255		381,739
Total		216,019,844		200,577,519		15,442,325
RIPRAP (cublic yards)		2,288,945		2,260,756		28,189
PAVING (square yards)		938,442		924,674		13,768
CONCRETE (cubic yards)		3,270,895		3,168,403		102,492
CEMENT (barrels)		3,307,152		3,181,124		126,028

DRAINAGE.

Estimate of seepage and summary of drainage work to June 30, 1923.

State and project.	Constructed drains.[1]		Estimated area damaged by seepage on June 30, 1923.	Estimated area protected by constructed drains.	Estimated area that will be protected when all drains authorized have been constructed.
	Open.	Closed.			
	Miles.	*Miles.*	*Acres.*	*Acres.*	*Acres.*
Arizona: Salt River [2]					
Arizona-California:					
Yuma—					
Reservation	11.70	4.00		8,000	8,000
Yuma Valley	33.80			30,000	50,000
Colorado:					
Grand Valley—					
Project lands	22.37		600	3,660	4,760
Grand Valley drainage district	38.30	1.00	29,000	10,000	10,000
Teller Institute	2.80			300	300
Frey drain	1.60			300	300
Uncompahgre [3]		94.00	16,200	9,200	9,200
Idaho:					
Boise—					
Riverside irrigation district	44.10		350	11,400	11,400
Pioneer irrigation district	78.50	.40	300	30,000	30,000
Nampa-Meridian irrigation district	45.76		400	51,000	51,000
Other parts	18.62	.10	5,000	6,000	10,000
King Hill [3]	.88			800	800
Minidoka (Gravity division)	109.00		1,000	30,000	30,000
Montana:					
Flathead (Indian)	.18	2.97	640	1,240	1,240
Huntley	16.73	50.50	1,300	21,500	21,500
Milk River—					
Malta division	2.0		2,300	100	130
Glasgow division			200		
Sun River—					
Fort Shaw division			2,571		
Greenfields division	5.10		1,200	1,840	7,000
Montana-North Dakota: Lower Yellowstone	4.50	1.10	1,800	1,600	1,600
Nebraska-Wyoming:					
North Platte—					
Interstate division	30.13	14.60	2,800	5,400	8,200
Interstate division [4]	43.26				
Fort Laramie division	56.21		650	200	16,000
Northport division	5.81		40	1,500	1,500
Nevada:					
Newlands—					
Carson division	125.92	3.99	10,000	54,150	[8] 88,483
Truckee division	11.59		200	3,707	[8] 13,940
New Mexico: Carlsbad	11.14	3.65	5,500	5,031	5,031
New Mexico-Texas:					
Rio Grande—					
Rincon division	8.30		8,000	4,000	17,000
Leasburg division	60.30		1,500	29,000	31,000
Mesilla division [6]	112.60		1,500	45,000	47,000
El Paso division [6]	101.40		6,000	45,000	55,000
Oregon:					
Umatilla	10.00		400	2,000	2,000
Klamath	103.00	8.00	2,000	28,700	30,000
South Dakota: Belle Fourche			4,133		
Utah: Strawberry Valley [3]	18.90	71.50	8,500	11,422	19,922
Washington:					
Yakima—					
Sunnyside division [7]	82.85	95.07	10,000	50,357	50,357
Tieton division [7]	7.50	2.30	200	2,400	2,400
Wyoming:					
Shoshone—					
South Garland division	29.55	92.30	1,300	18,000	26,000
North Garland division	37.93	2.27	3,000	6,500	12,000
West Garland division	1.02	1.24		500	500
Frannie division	44.03		3,500	6,000	22,000
Total	1,337.38	448.99	132,084	535,807	695,563

[1] Surface drains and waste ditches not included.
[2] Pumping and drainage plants have produced marked effect in lowering water table in certain areas.
[3] Constructed by landowners, water users, or drainage districts.
[4] Outlet channels, of which 7.74 miles were built by the United States as a part of the project drainage, 17.35 miles by the United States under cooperative contracts, 16.17 miles by the Farmers' irrigation district, and 2 miles by the Morrill drainage district.
[5] Includes 1.7 miles of temporary outlet abandoned.
[6] Includes 0.4 miles of temporary outlet to be abandoned.
[7] All drainage work done by county drainage engineer through drainage improvement districts.
[8] Area benefited.

POWER AND PUMPING.

Power plants operated on Bureau of Reclamation projects during the fiscal year 1922–23.

Project.	Name of plant.	Type of plant.	Station capacity.	Number of units.	Head.	First cost of plant.	Cost of operation.	Estimated depreciation.	Cost per kilowatt-hour, exclusive of depreciation.	Output.	Distribution of power generated (kilowatt-hours).				Gross power sales.
											Sold to consumers.	Used for irrigation purposes.	Used for other purposes.	Losses.	
			Kv-a.		*Feet.*					*Kilowatt-hours.*					
Boise	Boise	Hydroelectric	1,875	3	30.0	$167,905.37	$9,069.09	$5,540.00	$0.0017817	5,089,988	5,031,407		58,581		$11,000.00
Minidoka	Minidoka	....do	7,000	5	48.21	455,317.40	16,683.59	15,012.00	.000348	47,945,084	20,309,323	22,474,533	718,729	4,442,499	121,055.35
Newlands	Lahontan	....do	1,875	3	110	141,886.01	[1] 6,391.23	5,675.44	.000871	7,333,780	7,304,036		29,744		23,328.72
Williston	Williston	Steam electric	1,150	4		175,000.00	66,763.95	3,000.00	.03424	1,959,789	1,122,175	315,385	409,459	102,775	75,481.56
North Platte	Lingle	Hydroelectric	750	2	105	98,998.50	24,191.15	15,950.00	.009525	2,539,730	947,015		1,125,460	467,255	28,983.89
Okanogan	Power Plant No. 1 [2]	....do	187	1	108	11,923.44									
	Power Plant No. 2 [2]	....do	187	1	55	13,931.42									
Rio Grande	Elephant Butte No. 2.	....do	187	1	147.55	8,440.50	1,820.20	1,688.10	.09374	19,418			19,418		
Salt River	Arizona Falls	....do	950	2	19	109,500.73	8,923.55	5,475.00		3,029,800					
	Chandler	....do	600	1	40	91,990.84	11,174.30	4,600.00		3,347,450					
	Crosscut		5,250	6	111	755,147.29	31,385.71	37,757.00		13,333,200	357,618,250	13,482,157	2,038,810	7,045,733	567,641.74
	Roosevelt	Hydroelectric	11,750	6	80–225	870,317.94	62,919.39	43,516.00		80,276,550					
	South Consolidated	....do	1,600	2	23	163,139.60	10,070.91	8,157.00		4,274,100					
Shoshone	Shoshone	....do	2,000	2	120–220	564,924.00	10,540.00	13,519.00	.0058	1,817,200	150,270		1,040,424	626,526	5,701.01
Strawberry Valley.	Spanish Fork	....do	1,000	2	123.5	60,724.00	18,949.04	3,033.72	.01362	1,391,249	1,177,993		151,451	61,805	23,961.59
Yakima Storage	Tieton No. 1 [2] [4]	....do	270	2	45	40,000.00		11,510.88							
	Tieton No. 2 [5]	....do	1,000	2	74	76,758.16	12,461.71	33,496.32	.00320	3,895,800			3,784,809	111,000	
Yakima-Sunnyside.	Rocky Ford [6]	....do	187	1	73	23,000.00	1,765.35	1,056.00	.00222	795,500		795,500			

[1] Canal maintenance only. Balance of operation and maintenance paid by lessee, the Canyon Power Co.
[2] Not operated during fiscal year 1922–23.
[3] All five plants supply the same distributing system.
[4] Book value at present, $1,889.65.
[5] This amount includes cost of transmission lines and transformers to value of $9,000.
[6] Operated and maintained by Grandview irrigation district.

Pumping plants operated on Bureau of Reclamation projects during fiscal year 1922–23.

Project.	Name of plant.	Type of pumping unit.	Plant capacity.	Number of units.	Net lift.	First cost of plant.	Cost of operation.	Estimated depreciation.	Energy used for pumping.	Acre-feet pumped.	Cost per acre-foot without depreciation.	
											Per acre-foot.	Per foot lift.
			Horsepower.		*Feet.*				*Kilowatt-hours.*			
Grand Valley	Price Stub [1]	V. T. D. C.	125	1	31	$46,697.83	$780.33	$1,000.00		6,539	$0.12	$0.00387
Huntley	Ballantine	do	620	2	45	73,833.32	3,498.87	2,000.00	(2)	11,275	.31	.00689
	Ballantine auxiliary	O. E. D. C.	400	2	45	71,103.56	2,762.69	3,500.00		1,761	1.57	.03489
Minidoka	A–4 Raise [3]	Scoop wheel	25	1	3.5	3,328.42		249.63	34,113			
	Pumping station No. 1	V. M. D. C.	2,760	5	29.2	186,020.06	[4] 19,963.14	[4] 19,380.00	[5] 13,674,646	196,445	[6] 0.0438	[6] 0.00049
	Pumping station No. 2 [4]	do	2,400	4	30.2	184,920.00			8,799,847	160,350		
	Pumping station No. 3 [4 5]	do	1,560	3	29.9	103,106.96				99,188		
	Boersch Lake [3]	do	200	2	19.8	32,947.72		1,647.39	442,950			
	C–2 pumping station											
	114 pumping station [3]	H. M. D. C.	7.5	1	7	2,803.97		182.26	9,331			
	1812 pumping station [3]	do	5.0	1	4	1,008.76		65.57	5,866			
	1817 pumping station [3]	Scoop wheel	10.0	1	4.8	3,634.71		272.62	8,992			
	West End pumping station [3]	H. M. D. C.	150	2	21.25	18,745.61		817.30	413,800			
Williston	Pumping station No. 1	S. T. D. C.	450	2	56	8,850.00	6,975.83	300.00	86,429	838	8.32	.14857
	Pumping station No. 2	H. M. D. C.	175	2	26.6	14,065.00	2,947.46	800.00	54,830	495	5.95	.2236
	Pumping station No. 3	do	405	3	32	39,647.00	10,875.22	1,000.00	194,703	1,535.86	7.08	.22125
	Pumping station No. 4	do	100	1	27.25	8,821.00	1,644.12	500.00	36,554	282	5.83	.21394
North Platte	Dutch Flat Drain No. 1	V. M. D. C.	30	1	52	11,249.27	1,800.00			251	7.17	.13789
	Dutch Flat Drain No. 2	do	20	1	30	11,249.27	1,685.00			454	3.71	.12367
	Dutch Flat Drain No. 3	do	20	1	47	11,249.27	1,000.00			172	5.81	.12361
Okanogan	Duck Lake (old)	H. M. D. C.										
	Duck Lake (new) [7]	do	50	1	55	13,981.24	3,040.38		98,984	1,150	2.65	.04818
	Government wells Nos. 1 and 2	V. M. D. C.	30	2	35	18,588.21	1,830.81		60,967	370	4.95	.14143
	Robinson Flat [7]	H. M. D. C.	200	2	188	30,077.24	11,349.48		66,141	1,331.2	8.53	.04537
	Salmon Lake	G. E. D. C.	275	2	10–20	17,842.16	18,470.86			2,739.9	6.74	.44933
Salt River	Chandler division	{10 V. M. D. C. / 1 H. M. D. C.	795	11	35.91	148,084.21	8,914.48	10,365.89	2,209,436	26,656	.334	.0093
	Highline pumping plant	H. M. D. C.	900	4	47	91,038.90	14,093.00	4,551.94	3,847,666	33,885	.416	.00885
	Mesa division	V. M. D. C.	600	16	22.42	145,047.84	7,053.95	10,153.35	1,590,953	26,096	.27	.01204
	Phoenix division	do	365	18	57.20	133,791.11	10,958.08	9,365.38	1,904,243	12,447	.88	.015384
	Salt River division	do	760	21	29.03	169,318.26	17,009.07	11,852.28	2,997,274	44,031	.386	.0133
	San Francisco	H. M. D. C.	100	1	38	29,978.98	545.78	2,997.90	97,251	1,236	.441	.0116
	Tolleson division	V. M. D. C.	650	20	38.07	168,360.75	15,201.87	11,785.25	2,663,000	33,311	.456	.0119

Yakima Sunnyside.	Grand View [8]	V. T. D. C. / H. M. D. C.	365	3	35–78	72,500.00	[9]4,468.46	3,120.00		14,079	.317	.00561
	Hillcrest [10]	V. T. D. C.	35	1	103	5,800.00	130.63	300.00		359	.363	.00352
	Little Snipes Mountain [10]	H. T. D. C.	5	1	50	1,162.00	27.23	45.00		75	.363	.00726
	Outlook [11]	V. T. D. C.	800	2	110	92,000.00	3,470.71	2,480.00		16,330	.212	.00193
	Prosser [12]	H. T. D. C.	190	1	105	31,968.00	1,386.75	1,500.00		3,510	.395	.00376
	Snipes Mountain [10]	V. T. D. C.	550	2	200	48,500.00	2,498.53	1,890.00		6,883	.363	.00182
	Spring Creek [12]	H. T. D. C.	160	1	90	28,050.00	1,261.74	1,500.00		3,708	.34	.00378
Yuma	"B" Lift	V. M. D. C.	1,100	3	69	159,524.11	22,594.53	400.00	665,100	4,787.6	4.72	.169
	Reservation	G. E. D. C.	110	2	4.5	6,775.60	1,654.74	600.00		1,800	.92	.22
	Valley drainage	O. E. D. S.	275	3	9.98	191,066.91	13,736.39	2,000.00	41,300	37,995	.36	.036
	West Yuma pumping	G. E. D. C.	90	1	7	900.00	1,318.09	100.00		120	10.98	1.57
Lower Yellowstone.	Thomas Point [13]	H. T. D. C.	220	2	31	49,857.72	41.75	500.00	[2]	1,750	[14].06	.001936

[1] Type V. M. D. C.=Vertical motor driven centrifugal pump. H. M. D. C.=Horizontal motor driven centrifugal pump. S. T. D. C.=Steam turbine driven centrifugal pump. V. T. D. C.=Vertical hydraulic turbine driven centrifugal pump. H. T. D. C.=Horizontal hydraulic turbine driven centrifugal pump. O. E. D. C.=Oil engine driven centrifugal pump. O. E. D. S.=Oil engine driven screw pump. G. E. D. C.=Gasoline engine driven centrifugal pumps.

[2] Water power.

[3] Operated by Minidoka irrigation district.

[4] Total for three south side stations.

[5] Total for stations 2 and 3.

[6] Average for all three stations.

[7] Power supplied by Washington Water Power Co.

[8] Operated by Grandview irrigation district.

[9] Includes O. and M. cost of Rocky Ford Power Plant.

[10] Operated by Snipes Mountain irrigation district.

[11] Operated by Outlook irrigation district.

[12] Operated by Prosser irrigation district.

[13] Operated first on July 13, 1922.

[14] Based on 1923 operation.

Principal contracts for sale of power in force June 30, 1923.

Project.	Name of contractor.	Date of contract.	Date of expiration.	Maximum load.	Rate per kilowatt hour.	Gross income fiscal year 1922-23	Remarks.
				Kilowatts.			
Boise	Idaho Power Co	Apr. 1, 1923	Mar. 31, 1926	½ P. P. capacity.		$11,000.00	
Minidoka	Amalgamated Sugar Co	May 1, 1922	Feb. 28, 1926	7-67	Minidoka standard	1,293.01	
	City of Burley	Jan. 15, 1920	Jan. 1, 1930	200-3000	do	50,851.86	
	City of Rupert	Jan. 15, 1920	Jan. 1, 1930	150-2000	do	24,526.00	
	East End Electric Co	Jan. 23, 1918	Jan. 23, 1923	15	do	1,026.94	
	Ferry Light & Power Co	Mar. 12, 1919	Mar. 12, 1929	15	do	1,035.62	
	Minidoka irr'n district	Dec. 2, 1916		Reg. of irrig.	$0.003	2,745.17	
	Paul Electric Co	Feb. 1, 1920	Feb. 13, 1924	100-500	Minidoka standard	6,076.33	For heat, 75 cents per kilowatt month first 50 kilowatts.
	Rural Electric Co	Mar. 19, 1917	Mar. 31, 1927	11-15	do	1,731.93	
	Unity Light & Power Co	Mar. 19, 1917	Mar. 19, 1927	30-41	do	2,630.55	Minimum monthly payment $40.
	Village of Albion	Oct. 15, 1915	Jan. 8, 1926	30-100	do	5,525.34	Power.
	Do	Sept. 18, 1916	Jan. 8, 1926	200	$1.25 per kilowatt-month	2,209.17	Heat.
	Village of Declo	Oct. 26, 1920	Nov. 1, 1930	30-41	Minidoka standard	1,781.20	
	Village of Heyburn	Mar. 9, 1920	Jan. 1, 1930	50-200	do	1,789.11	
	56 small contracts			115.5	do	6,266.41	Each less than $1,000 annual revenue.
Newlands	Canon Power Co	July 10, 1914	Nov. 30, 1924	1500	¼ to ⅜ cents per kilowatt-hour	23,152.55	Minimum monthly payment $1,200.
Williston	City of Williston, N. Dak	Sept. 25, 1922	Sept. 25, 1932	600	2 cents to 5 cents	49,570.46	
North Platte	City of Mitchell, Nebr	May 5, 1922	Apr. 30, 1924	135	North Platte standard	11,108.45	
	City of Torrington, Wyo	May 10, 1921	May 9, 1923	125	do	10,261.41	
	Platte Valley Power Co	May 1, 1922	June 21, 1929	25	do	1,244.74	
	Security Land Co	Feb. 9, 1922	Mar. 1, 1927	25	do	528.33	
	Village of Lingle, Wyo	Jan. 19, 1922	Oct. 26, 1924	25	do	1,713.93	
	Village of Morrill, Nebr	May 2, 1922	Apr. 30, 1924	55	do	4,127.03	
Salt River						(1)	
Shoshone	City of Powell, Wyo	Sept. 21, 1921	Oct. 1, 1923	100	Shoshone standard	5,606.23	
Strawberry Valley	Castilla Hot Springs Co	Sept. 6, 1919	Sept. 6, 1924	10	Strawberry Valley standard	189.30	Minimum monthly payment $15.
	Payson City	Feb. 3, 1922	Feb. 5, 1925	120	do	9,597.48	
	Salem City	Feb. 3, 1922	Feb. 5, 1925	40	do	2,466.13	
	Spanish Fork City	Feb. 3, 1922	Feb. 5, 1925	200	do	9,651.94	
	Springville City	July 8, 1920	July 26, 1923	125	1 cent to 2 cents	1,607.10	Minimum monthly payment $50.
	Phelps Construction Co	June 30, 1922	Sept. 30, 1922	50	Strawberry Valley standard	225.00	Highway construction.

[1] Latest available report states that the total power revenues amounted to $524,003.18 for the year Oct. 1, 1920, to Sept. 30, 1921.

PURCHASES.

Purchases of material and supplies, 1910–1923.

Fiscal year.	Number of purchases.	Gross amount.	Discount.
1910	1,774	$504,023.60	.....
1911	1,607	574,323.74	.....
1912	2,205	930,018.53	.....
1913	2,735	459,890.17	$4,286.29
1914	3,116	471,466.28	4,604.28
1915	2,854	454,661.46	3,842.09
1916	5,049	680,601.99	6,747.38
1917	4,989	1,095,830.36	13,000.25
1918	6,215	1,809,560.84	17,876.29
1919	5,038	1,489,583.04	8,727.12
1920	3,968	948,270.46	9,523.42
1921	6,599	2,314,782.36	18,383.04
1922	5,892	1,678,919.00	17,153.70
1923	6,423	1,863,802.39	30,448.45
Total	58,464	15,275,734.22	134,592.31

TRANSPORTATION.

Freight and express data.

Fiscal year.	Bills settled.	Commercial charges.	Deduct account of contracts, land grant, and other causes.	
			Total.	Per cent.
1907	$278,782.10	$470,863.26	$192,081.16	40.8
1908	369,583.04	577,803.42	208,247.38	36.0
1909	778,047.12	1,403,970.10	625,922.98	44.5
1910	437,032.61	758,808.76	321,776.15	42.4
1911	405,360.55	666,876.59	261,516.04	39.2
1912	610,740.23	1,055,733.27	444,993.04	42.1
1913	481,118.91	837,077.59	355,958.68	42.5
1914	547,705.99	927,163.49	379,457.50	40.9
1915	778,893.33	1,393,347.96	614,454.63	44.1
1916	471,606.52	817,481.33	345,874.81	42.3
1917	393,477.70	653,013.98	259,536.28	39.7
1918	324,562.28	608,479.63	283,917.35	46.6
1919	331,056.20	534,580.94	203,524.74	38.1
1920	267,303.53	452,101.12	184,797.59	41.9
1921	359,499.56	599,730.66	240,231.10	40.0
1922	411,817.80	737,481.39	325,662.59	44.2
1923	406,766.25	667,138.77	269,729.21	40.4
Total	7,653,353.72	13,161,652.26	5,517,681.23	41.9

FINANCES.

GENERAL CLASSIFICATION.

For convenience and also because of the distinctive character of the work the finances are grouped under three general headings relating to—

(*a*) Reclamation-fund projects.

(*b*) Indian projects.

(*c*) Other projects and investigations.

Reclamation-fund projects include those constructed primarily from the reclamation fund. Incidentally other funds have been made available for these projects, appropriations being made from the General Treasury under the following headings:

Judgments Court of Claims.

Increase of compensation.

Rio Grande Dam.

Wind River Indian (Riverton).

Indian projects comprise work being done for the Bureau of Indian Affairs, the Bureau of Reclamation acting as a contractor. The appropriations are made for the Bureau of Indian Affairs and the combined financial statements do not include any of these funds except the one named in the foregoing, Wind River Indian (Riverton). This project, now known as Riverton, was initiated by funds appropriated for the Bureau of Indian Affairs, but is now being completed from the reclamation fund; hence it is classed as a reclamation-fund project, necessitating the inclusion of the Indian funds in the financial statements for reclamation-fund projects.

Other projects and investigations include the Yuma auxiliary; general investigations, Reclamation Service, 1923–December 31, 1924; and drainage and cut over. The Yuma auxiliary is a division of the Yuma project being constructed and operated by funds advanced by the purchasers of land and water rights. As no part of the reclamation fund is used it is not considered a reclamation-fund project, but treated as a separate entity.

General investigations, Reclamation Service, 1923–December 31, 1924, is the work being done as the result of an appropriation of $275,000, March 4, 1923, authorizing the investigation of irrigation possibilities in various places. As this fund is separate and distinct from the reclamation fund it is not included in the combined financial statements.

Drainage and cut over refers to an appropriation of $100,000 to investigate drainage and timber cut-over lands in all parts of the United States. By the transfer in the Treasury to surplus of $205.93 this account is closed.

RECLAMATION FUND.

This fund was created by an act of Congress June 17, 1902, known as the reclamation act. The act set aside certain portions of the receipts from the sale of public lands and town-site lots on reclamation projects. These receipts have been gradually declining, resulting in a corresponding decrease in the accretions to the reclamation fund. Subsequent acts of Congress have provided other sources of increment, notably the oil leasing act of February 25, 1920 (41 Stat. 437), under which a percentage of the royalties are credited to the reclamation fund. Small amounts have also been received from potassium royalties and rentals under the act of October 2,

1917 (40 Stat. 297), and from Federal water-power leases under the act of June 10, 1920 (41 Stat. 1063).

Table 1 is a statement of accretions to date from all sources to the reclamation fund. This statement gives the amounts by States, with the exception of $1,863.75 from Federal water-power licenses, for which the data by States is not now available.

BALANCES—RECLAMATION, WIND RIVER INDIAN, YUMA AUXILIARY, GENERAL INVESTIGATIONS, AND DRAINAGE AND CUT-OVER FUNDS.

Table 2 is a statement of the above funds, showing balances on hand July 1, 1922, receipts or appropriations and expenditures during the fiscal year 1923, and balances on hand July 1, 1923. Briefly these figures are as follows:

Reclamation fund:		
Balance July 1, 1922	$4,302,884.53	
Receipts fiscal year 1923	10,929,979.88	
		$15,232,864.41
Expenditures not including liabilities		10,583,596.95
Balance on hand July 1, 1923		4,649,267.46
Wind River Indian (Riverton):		
Balance on hand July 1, 1922	1,225.87	
Receipts	209.13	
		1,435.00
Expenditures and transferred to surplus		1,131.39
Balance on hand July 1, 1923		303.61
Yuma auxiliary:		
Balance on hand July 1, 1922	128,792.40	
Receipts	121,760.35	
		250,552.75
Expenditures not including liabilities		174,015.97
Balance on hand July 1, 1923		76,536.78
General investigations:		
Appropriation Mar. 4, 1923		275,000.00
Expenditures not including liabilities		16,408.24
Balance on hand July 1, 1923		258,591.76
Drainage and cut over:		
Balance on hand July 1, 1922		205.93
Transferred to surplus		205.93
Balance on hand July 1, 1923		0

FUNDS TO DATE, RECLAMATION-FUND PROJECTS.

In addition to the reclamation fund proper and the other funds mentioned under "General classification" the general Treasury advanced $20,000,000 also to be used in connection with the reclamation fund projects. This advance is now being repaid at the rate of $1,000,000 per year, $3,000,000 having been refunded to date. Below is a summarization of the funds to date:

Reclamation fund as per statement, Table 1		$118,493,463.22
Other funds:		
Judgments, Court of Claims		550,347.58
Rio Grande dam		1,000,000.00
Increase of compensation (net)		2,477,374.49
Wind River Indian (Riverton)		359,479.65
Total capital funds		122,880,664.94
Advance from General Treasury	$20,000,000	
Less amount repaid	3,000,000	
		17,000,000.00
Total funds		139,880,664.94
Less cash on hand:		
Reclamation fund	4,649,267.46	
Wind River Indian (Riverton)	303.61	
		4,649,571.07
Amount expended		135,231,093.87
Plus project collections reexpended		46,495,363.35
Grand total expenditures, not including liabilities (see Table 14)		181,726,457.22

The item of $46,495,363.35 represents all collections for construction and operation and maintenance repayments, rentals, sales, etc. All of these collections, with the exception of $985.65 creditable to Wind River (Indian) appropriation, are credited to the reclamation fund and reexpended within congressional limitations. Hence the grand total expenditures or disbursements may exceed the grand total of the reclamation fund.

APPROPRIATIONS.

Table 3 is a statement showing the status of the appropriations for reclamation fund and Indian projects, fiscal year 1923. The operations of the Bureau of Reclamation, in connection with the reclamation fund, are limited, first, by the balance in the fund and, second, by congressional appropriations or authorizations. Thus it is essential that approximate data be available as to the accretions to the reclamation fund a considerable period in advance, in order that the work may be economically planned, and that a control on the expenditures be kept by projects to prevent exceeding congressional authorizations. The statement referred to analyzes the 1923 authorizations, gives the actual expenditures, the balances unexpended, the liabilities, and the unincumbered balances which will in due time be closed out. The total authorized, as indicated, is made up of not only the amounts specified in the appropriations act but the authorized 10 per cent transfers between projects, the actual expenditures on account of increase of compensation and the miscellaneous collections which are additions to the project available funds.

ASSETS, LIABILITIES, AND CAPITAL.

Table 4 is a consolidated statement of assets, liabilities, and capital as of June 30, 1923, for reclamation fund projects. This statement attempts to set forth as nearly as possible the true status of the funds set aside and invested in reclamation-fund projects. The assets include cash on hand, value of inventories and plant not charged to construction or operation and maintenance cost, accounts receivable, both due and not due, the value of irrigation projects being constructed and not covered by specific repayment contracts, etc. Some projects have been wholly or partly abandoned and in a few cases the water users have been relieved of repayment of certain amounts. These amounts together with the investment in abandoned projects have been treated as amounts whch will not be repaid to the reclamation fund and hence offset the capital. Also there has been an investment in what is known as secondary projects. The return of this investment depends of course upon the construction of projects. On account of the uncertainty of the adoption of projects to which the investment can be charged the entire amount is treated as an offset to capital. Another amount which will not be returned is the appropriation of $1,000,000 for the Rio Grande dam, which appropriation was for the purpose of providing water for lands in Mexico and is not chargeable to the water users on the Rio Grande project. These items which deplete the capital are, however, offset by what for lack of a better term are called "reserves." These are receipts such as rentals of grazing and farming lands, construction penalties, etc., which are not considered creditable to water users and are therefore returns in addition to the

contracts for water rights. It will be noted that the capital, or the funds set aside by the United States for reclamation-fund projects, amounts to date to $122,880,664.94, which, together with the unpaid advance from the Treasury ($17,000,000) amounts to $139,880,664.94. Of this amount only $3,119,581.12, or 2.2 per cent, is of doubtful returnable value.

The accounts receivable (due) have increased considerably on account of the financial depression and consequent necessity of temporary relief.

The operation and maintenance, unaccrued, totals $1,748,006.70. This includes the cost for the first half of the calendar year 1923, which will, under public notices already issued, be billed and transferred to charges due during the fiscal year 1924. It also includes some amounts which have, by specified contract, been deferred as to payment to some future date. It also includes the excess of cost over charges or contracts, owing to the fact that it has not always been practicable to assess charges to cover the entire cost.

CONSTRUCTION COSTS.

Table 5 is a statement summarizing, by projects, the net construction cost, loss, nonreimbursable, contracted returns, and balances. By net cost is meant the gross, less incidental revenues such as rentals of buildings, etc. These revenues are distinguished from contracted returns in that the latter are in the nature of permanent water rights.

Constructed returns include individual water-right applications, agreements with water users' organizations, etc., and the amounts advanced for construction purposes by beneficiaries prior to execution of the work.

The balance includes the cost which has not been covered by repayment contracts or classed as loss or nonreimbursable. On the statement of assets and liabilities the balance as of June 30, 1923, is listed as an asset because it represents a value that is secured by irrigable land of little value without water, and the security is further enhanced in the case of public land in that entry can only be made, subject to the reclamation law and, in the case of private land much of it is in one form or another obligated to the United States.

OPERATION AND MAINTENANCE COSTS.

Tables 6 and 7 are statements showing the status, by projects, of the operation and maintenance, the first indicating the results as of December 31, 1922, and the second as of June 30, 1923.

Similar to the construction statement, the net cost represents the gross, less incidental revenues.

The contracted returns include charges billed and definite contracts to repay the cost at some specified time. The "balance" is the excess of cost over loss and contracted returns. The balance, in the case of the statement as of June 30, 1923, includes the cost for the first half of the calendar year 1923, which amount is already covered by public notices and will be billed at the appropriate time.

The statement as of December 31, 1922, is for the purpose of showing the results at the close of the last operating season. The contra balances in the column "calendar year 1922" indicate an excess for the year of contracted returns over cost. Likewise the

contra balances in the column "to December 31, 1922," indicate an excess to date of contracted returns over cost. Even on projects where there is an excess to date of contracted returns over cost the investment of the United States in operation and maintenance is considerable as it includes outstanding bills and contracted charges unaccrued.

REPAYMENTS.

Table 8 is a statement showing the status of the accrued construction charges, or those charges which are intended to return the "net construction cost."

Table 9 is a similar statement for operation and maintenance.

MISCELLANEOUS RETURNS.

Tables 10, 11, and 12 are statements showing the status of accrued charges in connection with various classes of revenues—rentals of irrigating water, rentals of power and light, and rentals of grazing and farming lands.

Table 13 is a statement showing the uncollected balances of miscellaneous accounts.

A brief summary of the status of repayments and revenues is as follows:

	Due to June 30, 1923.	Collected to June 30, 1923.	Uncollected June 30, 1923.
Construction charges	$17,763,730.67	$15,226,508.21	$2,537,222.46
Operation and maintenance charges	13,776,549.47	11,352,900.41	2,423,649.06
Rentals, water	7,360,492.27	7,180,355.04	180,137.23
Rentals, power and light	2,590,519.47	2,556,978.41	33,541.06
Rentals, grazing, and farming lands	759,065.92	739,037.48	20,028.44
Total	42,250,357.80	[1] 37,055,779.55	5,194,578.25
Miscellaneous uncollected			124,431.92
Grand total uncollected			5,319,010.17

[1] Includes $658,741.63 credits other than cash.

The reclamation act provides for the return by the beneficiaries of the expenditures, and these returns or collections go back to the fund. Below is a statement of all cash collections for the year and to date:

	Fiscal year 1923.	To June 30, 1923.
Repayments, construction [1]	$2,334,805.79	$15,268,240.26
Operation, and maintenance [2]	1,803,337.29	11,260,212.72
Revenues:		
Rentals of water	257,058.59	7,156,546.01
Rentals of power and light	242,954.23	2,493,430.09
Rentals of grazing and farming lands [3]	199,279.21	696,518.93
Repaid by Bureau of Indian Affairs		2,997,829.24
Miscellaneous	306,493.11	6,621,600.45
Total	5,143,928.22	46,494,377.70

[1] Includes amounts paid in advance of due dates, $307,116.07 as of June 30, 1923; $243,312.31, fiscal year 1923; and $63,803.78, prior years.

[2] Includes amount paid in advance of due dates, $19,188.42 for the year and to date; also penalties and interest, $66,735.43 for the year and $215,153.90 to date.

[3] See Klamath project statement for adjustment.

The following is a comparison of total collections during the past six fiscal years:

1918	$3,459,446.00
1919	3,862,224.67
1920	4,911,882.83
1921	4,191,884.13
1922	4,294,507.34
1923	5,143,928.22

For collections by years prior to 1918 see twentieth annual report.

NET INVESTMENT, RECLAMATION FUND PROJECTS.

By net investment is meant the actual disbursements less the collections. What is known as transfers between projects affect the net results for a particular project, but for the Service as a whole the net investment is not affected.

Table 14 is a statement showing the net investment by projects. The expenditures in connection with the civil-service retirement fund and the Denver, Washington, and field legal offices may be considered as in transit to project accounts, as ultimately they will be transferred to projects. It may be further stated that the net investment for each project is the amount that would return to the United States its full cash outlay. This, of course, does not take into consideration liabilities.

NET INVESTMENT, OTHER THAN RECLAMATION FUND PROJECTS.

As previously stated, in addition to "Reclamation fund projects" the Bureau of Reclamation is interested in funds for the following: Yuma auxiliary; Drainage and cutover; General investigations, Reclamation Service 1923-December 31, 1924; Indian projects (Blackfeet, Flathead, Fort Peck).

Table 15 is a statement showing the net investment as of June 30, 1923.

TABLE 1.—*Accretions to reclamation fund, by States.*

	Sales of public lands.		Sale of reclamation townsites.		Proceeds from oil leasing act.[1]		Potassium royalties and rentals.[1]	Totals to June 30, 1923.
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.	Past production.	Current production.		
Arizona	$95,424.42	$2,093,138.64						$2,093,138.64
California	159,398.52	7,283,238.65			$2,094,025.61	$1,585,248.90	$16,178.64	10,978,691.80
Colorado	183,668.60	9,614,008.49			135.91	13,690.00		9,627,834.40
Idaho	80,927.94	6,639,463.76	$72.38	$175,839.07		196.11		6,815,498.94
Kansas	5.68	1,034,192.31						1,034,192.31
Louisiana [2]					484.02	639.76		1,123.78
Montana	183,907.02	14,655,020.48	854.31	120,644.24		296,850.18		15,072,514.90
Nebraska	4,325.24	2,080,646.89						2,080,646.89
Nevada	34,512.14	898,194.15						898,194.15
New Mexico	139,802.85	5,657,145.34				1,617.65		5,658,762.99
North Dakota	[3] 4,392.49	12,207,254.03				3,773.86		12,211,027.89
Oklahoma	[3] 12,375.41	5,914,822.72						5,914,822.72
Oregon	64,248.23	11,604,931.17						11,604,931.17
South Dakota	21,382.59	7,677,910.47	245.70	74,575.92		45.94		7,752,532.33
Utah	144,523.30	3,541,440.66				37,059.99		3,578,500.65
Washington	31,955.49	7,265,532.79				4,315.15		7,269,847.94
Wyoming	255,539.01	7,536,162.14	6,884.65	205,361.45	2,121,620.27	6,036,194.11		15,899,337.97
Total	1,382,853.13	105,703,102.69	8,057.04	576,420.68	4,216,265.81	7,979,631.65	16,178.64	118,491,599.47
Proceeds Federal water power licenses [1]								1,863.75
Grand total								118,493,463.22

[1] Totals to June 30, 1923,
Total proceeds for fiscal year 1923:

Oil leasing act, past production	$44,786.63
Oil leasing act, current production	4,346,638.96
Potassium royalties and penalties	1,958.46
Federal water power licenses	1,757.44

[2] Subject to adjustment.
[3] Contra.

TABLE 2.—*Available funds, expenditures and balances, fiscal year 1923 (except for Indian projects).*

	Appropriation.	Reclamation fund projects.		Other projects and investigations.			Increase of compensation.
		Reclamation fund.	Wind River Indian (Riverton).	Yuma auxiliary.	General investigations.	Drainage and cutover.	
Balance on hand July 1, 1922		$4,302,884.53	$1,225.87	$128,792.40		$205.93	
Proceeds from sale public lands	$1,382,853.13						
Proceeds from sale of town lots	8,057.04						
Proceeds from oil leasing act:							
Past production	44,786.63						
Current production	4,346,638.96						
Proceeds from potassium royalties	1,958.46						
Proceeds from Federal water-power leases	1,757.44						
Project collections	5,143,928.22						
		10,929,979.88	.19				
From general treasury			208.94		$275,000.00		$270,711.79
From miscellaneous collections	1,063.93						
From sale of lands	11,047.19						
From sale of water rights	109,649.23			121,760.35			
		15,232,864.41	1,435.00	250,552.75	275,000.00	205.93	270,711.79
Expenditures:							
Repayment bond loan	1,000,000.00						
Disbursements	9,583,596.95						
		10,583,596.95	969.69	174,015.97	16,408.24		
Reclamation fund projects	268,527.81						
Yuma auxiliary project	1,879.17						
Reclamation Service 1923-Dec. 31, 1924	304.81						270,711.79
To surplus			161.70			205.93	
Balance on hand July, 1923		4,649,267.46	303.61	76,536.78	258,591.76		

TABLE 3.—*Appropriations by projects for the fiscal year 1923, showing increases and decreases authorized, liabilities and expenditures, and balances (to lapse) unencumbered.*

State.	Project.	Appropriation act	10 per cent increases and decreases.	Contributed funds not spent previous years.	Increase of compensation (net).	Miscellaneous collections and transfers.	Total authorized.	Expenditures.	Balance unexpended.	Liabilities.	Balance unencumbered (to lapse).
Arizona	Salt River	$5,000.00					$5,000.00		$5,000.00		$5,000.00
Arizona-California	Yuma	550,000.00	[1] $39,600.00		$14,452.96	$76,060.23	600,913.19	$373,259.78	227,653.41	$61,784.24	165,869.17
California	Orland	125,000.00			3,559.48	4,108.57	132,668.05	76,827.72	55,840.33	3,854.30	51,986.03
Colorado	Grand Valley	440,000.00			4,994.61	52,088.07	497,082.68	324,130.97	172,951.71	80,267.67	92,684.04
Do	Uncompahgre	215,000.00			10,324.56	62,564.42	287,888.98	131,261.41	156,627.57	35,571.71	121,055.86
Idaho	Boise	1,220,000.00	122,000.00		24,607.71	51,555.34	1,418,163.05	735,307.15	682,855.90	420,146.66	262,709.24
Do	Minidoka	1,200,000.00	120,000.00		13,415.92	433,676.84	1,767,092.76	888,747.04	878,345.72	599,297.30	279,048.42
Do	King Hill	450,000.00			8,523.74	58,245.79	516,769.53	374,257.50	142,512.03	17,153.92	125,358.11
Montana	Huntley	170,000.00			1,987.85	8,916.56	180,904.41	37,107.70	143,796.71	4,657.70	139,139.01
Do	Milk River	690,000.00	[1] 69,000.00		9,504.69	41,051.65	671,556.34	159,301.32	512,255.02	32,109.49	480,145.53
Do	Sun River	345,000.00			5,757.73	17,983.08	368,740.81	238,558.33	130,182.48	102,233.59	27,948.89
Montana-North Dakota	Lower Yellowstone	180,000.00			2,659.60	5,338.17	187,997.77	61,597.93	126,399.84	21,155.33	105,244.51
Nebraska-Wyoming	North Platte	1,440,000.00	144,000.00		26,068.58	116,093.73	1,726,162.31	1,122,194.93	603,967.38	583,559.64	20,407.74
Nevada	Newlands	915,000.00	[1] 91,500.00		10,582.57	33,298.25	867,380.82	393,463.07	473,917.75	171,999.49	301,918.26
New Mexico	Carlsbad	65,000.00			2,924.77	20,751.19	88,675.96	41,959.62	46,716.34	390.84	46,325.50
New Mexico-Texas	Rio Grande	1,000,000.00			33,948.71	66,122.57	1,100,071.28	828,910.62	271,160.66	177,538.92	93,621.74
North Dakota	Williston	115,000.00			2,539.55	50,143.93	167,683.48	70,517.44	97,166.04	4,394.64	92,771.40
Oregon	Umatilla	500,000.00	[1] 50,000.00		4,736.83	10,286.34	465,023.17	111,210.01	353,813.16	199,186.05	154,627.11
Oregon-California	Klamath	700,000.00	[1] 70,000.00		8,942.77	26,085.40	665,028.17	468,194.02	196,834.15	77,410.49	119,423.66
South Dakota	Belle Fourche	350,000.00	[1] 35,000.00		3,913.23	17,045.56	335,958.79	50,541.74	285,417.05	8,032.32	277,384.73
Utah	Strawberry Valley	85,000.00			3,432.57	47,031.95	135,464.52	40,843.54	94,620.98	1,931.21	92,689.77
Washington	Okanogan	40,000.00	4,000.00		2,860.97	20,224.18	67,085.15	53,200.82	13,884.33	3,988.91	9,895.42
Do	Yakima	1,500,000.00			31,830.94	57,467.08	1,589,298.02	1,142,784.37	446,513.65	242,481.50	204,032.15
Wyoming	Riverton	925,000.00			5,095.71	18,098.84	948,194.55	457,285.88	490,908.67	208,652.34	282,256.33
	Shoshone	975,000.00	5,100.00		16,255.13	27,412.50	1,023,767.63	775,969.73	247,797.90	147,036.06	100,761.84
	Secondary:										
	Baker	400,000.00	[1] 40,000.00		1,356.95	2,184.42	363,541.37	49,180.83	314,360.54	72.89	314,287.65
	Others	200,000.00		$31,462.06	5,972.19	91,576.23	329,010.48	217,868.55	111,141.93	5,763.54	105,378.39
Total reclamation fund projects.		14,800,000.00		31,462.06	260,250.32	1,415,410.89	16,507,123.27	9,224,482.02	7,282,641.25	3,210,670.75	4,071,970.50
INDIAN PROJECTS.											
Montana	Blackfeet	30,000.00			2,389.94	12,239.58	44,629.52	42,270.23	2,359.29	2,359.29	
	Flathead	200,000.00			7,948.22	25,660.95	233,609.17	230,654.21	2,954.96	408.48	2,546.48
	Fort Peck	19,000.00			1,039.97	626.95	20,666.92	14,814.79	5,852.13	1,672.66	4,179.47
		249,000.00			11,378.13	38,527.48	298,905.61	287,739.23	11,166.38	4,440.43	6,725.95

[1] Contra. Transfers between projects in accordance with the appropriation act. Cash on hand with United States Treasurer and special fiscal agents on projects, $4,649,267.46.

TABLE 4.—*Assets, liabilities, and capital, reclamation fund projects, June 30, 1923.*

	Balances.	Subtotals.	Total.
Assets:			
Cash—			
Reclamation fund—			
With Treasurer United States	$3,893,152.42		
With Treasurer United States, unadjusted	.56		
With special fiscal agents	756,114.48	$4,649,267.46	
Wind River Indian (Riverton)—			
With Treasurer United States		303.61	
With employees, including special deposits		60,004.72	$4,709,575.79
Inventories—			
Lumber, steel, cement, forage, fuel, etc			1,091,551.17
Plant and equipment, original value less depreciation			2,498,805.58
Prepaid civil-service retirement fund			6,001.73
Accounts receivable (due)—			
Uncollected construction water-right charges		2,537,222.46	
Uncollected operation and maintenance charges		2,423,649.06	
Uncollected rentals of grazing and farming lands		20,028.44	
Uncollected rentals of power and light		33,541.06	
Uncollected rentals of irrigating water		180,137.23	
Uncollected miscellaneous		124,431.92	5,319,010.17
Accounts receivable (not due)—			
Construction charges unaccrued		83,488,071.33	
Construction charges paid in advance		[3] 366,334.27	83,121,737.06
Operation and maintenance charges unaccrued—			
Contracted [1]	518,153.55		
Less charges paid in advance	19,251.60	498,901.95	
Not contracted [2]	1,498,921.34		
Less loss	249,816.59	1,249,104.75	1,748,006.70
Miscellaneous charges unaccrued			276,768.10
Irrigation works—			
Gross construction cost	147,186,989.06		
Less miscellaneous revenues	4,132,967.91	143,054,021.15	
Less—			
Nonreimbursable	1,000,000.00		
Contracted returns	101,253,015.85		
Loss	1,358,979.21	103,611,995.06	39,442,026.09
Undistributed cost of general offices			18,315.38
Investment items in transit			34,769.07
Total assets			138,266,566.84
Liabilities:			
Accounts payable (due)—			
Services, purchases, transportation, etc	1,446,178.60		
Accounts payable (not due)—			
Uncompleted construction contracts, undelivered purchase orders, special cash deposits, etc	1,917,563.70	3,363,742.30	
Less contingent asset value of uncompleted contracts, undelivered purchases, etc		1,858,025.57	1,505,716.73
Treasury loan to reclamation fund—			
Amount loaned		20,000,000.00	
Less amount repaid		3,000,000.00	17,000,000.00
Capital:			
Reclamation fund—			
Proceeds public land sales	105,703,102.69		
Proceeds townsite sales	576,420.68		
Proceeds potassium royalties and rentals	16,178.64		
Proceeds, oil-leasing act—			
Past production	4,216,265.81		
Current production	7,979,631.65		
Proceeds Federal water-power licenses	1,863.75	118,493,463.22	
Special funds—			
Judgments Court of Claims	550,347.58		
Rio Grande Dam	1,000,000.00		
Increase of compensation (net)	2,477,374.49		
Wind River Indian (Riverton)	359,479.65	4,387,201.72	
Total capital		122,880,664.94	
Less—			
Secondary project investigations—			
Net cost	1,996,753.13		
Less funds advanced	463,491.99		
	1,533,261.14		
Construction and operation and maintenance loss	1,608,795.80		
Rio Grande Dam, nonreimbursable	1,000,000.00		
	4,142,056.94		
Less reserves	1,022,242.11	3,119,814.83	119,760,850.11
Total liabilities and unimpaired capital			138,266,566.84

[1] Covered by specific agreements.
[2] Includes cost first half of calendar year 1923, to be covered by accruals for the year. Remainder to be covered by future public notices or other agreements.
[3] Contra.

TABLE 5.—*Consolidated statement, by projects, of net construction cost and contracted repayments.*

State and project.	Net cost.		Loss.	Nonreimbursable.	Contracted repayments.		Balance.	
	Fiscal year, 1923.	To June 30, 1923.			Fiscal year, 1923.	To June 30, 1923.	Fiscal year, 1923.	To June 30, 1923.
Arizona: Salt River		$10,548,119.28	$382,097.31		[1] $83.14	$10,166,021.97	[1] $83.14	
Arizona-California: Yuma	$84,389.70	9,026,572.84			31,113.75	5,743,583.17	53,275.95	$3,282,989.67
California: Orland	33,836.74	1,091,795.87			55,419.27	1,119,572.75	[1] 21,582.53	[1] 27,776.88
Colorado:								
Grand Valley	252,723.37	4,017,921.98			999,843.37	1,000,000.00	[1] 747,120.00	3,017,921.98
Uncompahgre	47,890.96	6,715,074.41	47,370.81			6,713,584.50	47,890.96	[1] 45,880.90
Idaho:								
Boise	305,628.76	12,731,409.73			321,846.06	12,648,436.56	[1] 16,217.30	82,973.17
King Hill	409,766.99	1,881,391.45				2,000,000.00	409,766.99	[1] 118,608.55
Minidoka	1,220,737.25	8,066,977.12			195,064.13	7,111,081.99	1,025,673.12	955,895.13
Kansas: Garden City		385,651.07	331,474.96		[1] 1,953.19	51,176.11	[1] 1,953.19	
Montana:								
Huntley	7,938.32	1,475,623.45			[1] 3,664.19	1,321,333.89	11,602.51	154,289.56
Lower Yellowstone	66,543.62	3,632,949.27				3,614,104.21	66,543.62	18,845.06
Milk River	202,186.94	6,762,083.25					202,186.94	6,762,083.25
Sun River	210,522.06	4,248,361.84			[1] 4,570.80	423,127.04	215,092.86	3,825,234.80
Nebraska-Wyoming: North Platte	1,049,244.33	14,011,574.27			124,492.87	8,974,299.52	924,751.46	5,037,274.75
Nevada: Newlands	299,084.33	6,990,498.85			[1] 54,335.00	2,638,279.01	353,419.33	4,352,219.84
New Mexico:								
Carlsbad	[1] 1,374.86	1,395,928.79			14,391.75	1,431,872.81	[1] 15,766.61	[1] 35,944.02
Hondo		371,867.17	371,867.17					
New Mexico-Texas: Rio Grande	830,765.45	12,146,114.43		$1,000,000.00	[1] 5,000.00	7,650,000.00	835,765.45	3,496,114.43
North Dakota:								
Buford-Trenton	[1] 1,099.26	223,168.96	223,168.96				[1] 1,099.26	
Williston	[1] 421.43	460,107.18				290,803.74	[1] 421.43	169,303.44
Oregon: Umatilla	75,142.70	2,874,027.84			17,969.48	2,705,073.97	57,173.22	168,953.87
Oregon-California: Klamath	437,841.89	3,978,175.73			1,069,022.45	3,166,259.39	[1] 631,180.56	811,916.34
South Dakota: Belle Fourche	[1] 1,252.56	3,567,437.13			[1] 20,568.70	2,597,278.39	19,316.14	970,158.74
Utah: Strawberry Valley	[1] 5,493.80	3,466,968.00			1,100.00	3,084,099.37	[1] 6,593.80	382,868.63
Washington:								
Okanogan	[1] 4,317.26	1,393,740.41			[1] 4,424.00	1,498,579.29	106.74	[1] 104,838.88
Yakima	1,233,778.73	12,239,239.57			115,942.05	9,712,908.74	1,117,836.68	2,526,330.83
Wyoming:								
Riverton	425,820.45	1,060,228.09					425,820.45	1,060,228.09
Shoshone	811,155.85	8,291,013.17			691,335.37	5,591,539.43	119,820.48	2,699,473.74
Total	7,991,039.27	143,054,021.15	1,358,979.21	1,000,000.00	3,542,941.53	101,253,015.85	4,444,025.08	39,442,026.09

[1] Contra.

TABLE 6.—*Consolidated statement, by projects, of net operation and maintenance cost and contracted repayments, by calendar years.*

State and project.	Net cost.		Loss.	Contracted repayments.		Balance.	
	Calendar year 1922.	To Dec. 31, 1922.		Calendar year 1922.	To Dec. 31, 1922.	Calendar year 1922.	To Dec. 31, 1922.
Arizona-California:							
Yuma	$238,813.90	$1,515,443.58	.....	$238,178.19	$1,120,341.49	$635.71	$395,102.09
California: Orland	35,319.01	200,510.23	.....	35,893.77	200,566.94	[1] 574.76	[1] 56.71
Idaho:							
Boise	227,468.45	1,407,933.13	.....	293,987.12	1,474,415.41	[1] 66,518.67	[1] 66,482.28
Minidoka	112,132.99	1,318,703.33	.....	133,904.02	1,366,764.33	[1] 21,771.03	[1] 48,061.00
Montana:							
Huntley	39,730.89	829,707.53	.....	45,671.79	422,824.78	[1] 5,940.90	406,882.75
Sun River	14,569.42	192,237.02	.....	13,991.43	162,318.28	577.99	29,918.74
Montana-North Dakota: Lower Yellowstone	[1] 87,782.78	204,172.49	.....	[1] 89,348.60	204,172.49	1,565.82	.....
Nebraska - Wyoming: North Platte	178,791.58	1,609,453.54	.....	199,388.74	1,759,286.94	[1] 20,597.16	[1] 149,833.40
Nevada: Newlands	111,847.35	968,472.89	.....	216,292.87	899,001.87	[1] 104,445.52	69,471.02
New Mexico: Carlsbad	55,587.90	460,691.20	.....	54,961.39	451,730.82	626.51	8,960.38
New Mexico-Texas: Rio Grande	213,545.62	447,300.04	.....	215,623.09	445,643.07	[1] 2,077.47	1,656.97
North Dakota:							
Buford-Trenton	.....	73,466.80	$71,149.39	.....	2,317.41	.....	.....
Williston	20,729.65	342,835.87	178,667.20	20,729.65	164,168.67	.....	.....
Oregon: Umatilla	34,193.79	324,976.70	.....	37,431.42	335,750.19	[1] 3,237.63	[1] 10,773.49
Oregon - California: Klamath	42,186.04	544,908.95	.....	44,650.84	557,394.35	[1] 2,464.80	[1] 12,485.40
South Dakota: Belle Fourche	55,685.88	922,477.91	.....	100,108.30	874,542.19	[1] 44,422.42	47,935.72
Utah: Strawberry Valley	39,926.90	341,502.04	.....	61,190.29	271,384.31	[1] 21,263.39	70,117.73
Washington:							
Okanogan	[1] 39,911.49	265,594.79	.....	56,741.07	263,696.06	[1] 96,652.56	1,898.73
Yakima	230,173.02	2,103,493.42	.....	253,611.40	2,136,749.87	[1] 23,438.38	[1] 33,256.45
Wyoming: Shoshone	58,431.13	586,357.43	.....	74,187.68	607,162.49	[1] 15,756.55	[1] 20,805.06
Total	1,581,439.25	14,660,238.89	249,816.59	2,007,194.46	13,720,231.96	[1] 425,755.21	690,190.34

[1] Contra.

NOTE.—Contras in balance columns indicate excess of contracted returns over net costs.

TABLE 7.—*Consolidated statement, by projects, of net operation and maintenance cost and contracted repayments, by fiscal years.*

State and project.	Net cost.		Loss.	Contracted repayments.		Balance.	
	Fiscal year 1923.	To June 30, 1923.		Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.
Arizona-California:							
Yuma	$263,211.29	$1,667,934.67	.....	$244,747.49	$1,132,169.79	$18,463.80	$535,764.88
California: Orland	38,575.24	218,610.67	.....	35,897.00	200,570.17	2,678.24	18,040.50
Colorado: Uncompahgre	81,724.16	81,724.16	.....	.....	.....	81,724.16	81,724.16
Idaho:							
Boise	223,548.24	1,530,627.13	.....	284,457.28	1,478,991.48	[1] 60,909.04	51,635.65
Minidoka	118,991.91	1,369,602.32	.....	139,029.20	1,403,898.11	[1] 20,037.29	[1] 34,295.79
Montana:							
Huntley	39,003.14	849,287.82	.....	47,975.18	424,074.36	[1] 8,972.04	425,213.46
Sun River	13,404.24	199,251.24	.....	13,841.50	162,102.10	[1] 437.26	37,149.14
Montana - North Dakota: Lower Yellowstone	41,115.78	221,920.56	.....	37,153.52	199,415.17	3,962.26	22,505.39
Nebraska - Wyoming: North Platte	167,587.99	1,693,539.13	.....	207,788.12	1,786,213.46	[1] 40,200.13	[1] 92,674.33
Nevada: Newlands	118,496.21	1,044,213.12	.....	119,130.30	896,001.46	[1] 634.09	148,211.66
New Mexico: Carlsbad	43,386.26	481,790.56	.....	58,702.87	455,820.91	[1] 15,316.61	25,969.65
New Mexico-Texas: Rio Grande	181,557.60	548,366.12	.....	217,989.35	447,604.14	[1] 36,431.75	100,761.98
North Dakota: Buford - Trenton	.....	73,466.80	$71,149.39	.....	2,317.41	.....	.....
Williston	28,796.05	357,244.00	178,667.20	10,487.83	160,268.58	18,308.22	18,308.22
Oregon: Umatilla	34,732.77	343,488.77	.....	35,485.47	334,579.09	[1] 752.70	8,909.68
Oregon-California: Klamath	53,028.23	578,556.15	.....	54,894.63	557,383.17	[1] 1,866.40	21,172.98
South Dakota: Belle Fourche	56,378.71	951,665.57	.....	99,697.07	874,198.81	[1] 43,318.36	77,466.76
Utah: Strawberry Valley	24,415.90	352,254.65	.....	128,250.13	346,183.18	[1] 103,834.23	6,071.47
Washington:							
Okanogan	43,535.09	287,633.34	.....	55,952.47	264,174.81	[1] 12,417.38	23,458.53
Yakima	234,364.05	2,223,579.28	.....	268,088.73	2,211,433.54	[1] 33,724.68	12,145.74
Wyoming: Shoshone	58,835.72	616,200.16	.....	74,799.54	607,109.91	[1] 15,963.82	9,090.25
Total	1,864,688.58	15,690,956.22	249,816.59	2,134,367.68	13,944,509.65	[1] 269,679.10	1,496,629.98
Idaho: Boise (drainage)	36,913.77	101,260.22	.....	149,822.29	348,785.45	[1] 112,908.52	[1] 247,525.23
Total	1,901,602.35	15,792,216.44	249,816.59	2,284,189.97	14,293,295.10	[1] 382,587.62	1,249,104.75

[1] Contra.

TABLE 8.—*Construction repayments (including funds advanced for construction).*

State and project.	Due.		Collected.			Uncollected June 30, 1923.
			Cash.		Other credits to June 30, 1923.	
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.		
Arizona: Salt River	[1] $333,044.46	$886,961.32	$276,161.05	$886,961.32	.....	.....
Arizona-California: Yuma	168,372.26	1,155,139.22	153,666.89	1,080,550.41	1,152.57	$73,436.24
California: Orland	65,944.77	235,229.42	65,944.77	235,229.42	.....	.....
Colorado:						
Grand Valley	[1] 156.63	.....	[1] 156.63	.....	.....	.....
Uncompahgre	145,327.50	146,261.30	28,165.08	29,098.88	14,497.08	102,665.34
Idaho:						
Boise	430,244.95	1,737,824.13	287,431.48	1,374,177.52	25,092.00	338,554.61
King Hill	50,664.77	127,416.97	.....	.....	.....	127,416.97
Minidoka	391,380.67	2,961,962.58	268,757.73	2,499,876.11	154,289.87	307,796.60
Kansas: Garden City [2]	[1] 1,953.19	51,176.11	[1] 1,618.19	51,176.11	.....	.....
Montana:						
Huntley	25,526.60	392,645.03	14,537.91	359,845.36	502.21	32,297.46
Sun River	11,563.86	160,357.20	5,036.87	140,900.36	96.67	19,360.17
Montana-North Dakota:						
Lower Yellowstone	.....	41,135.10	.....	41,135.10	.....	.....
Nebraska-Wyoming: North						
Platte	430,764.49	2,412,447.91	173,632.87	1,707,873.53	34,294.92	670,279.46
Nevada: Newlands	38,799.68	545,370.05	32,121.25	514,775.66	6,004.95	24,589.44
New Mexico: Carlsbad	53,507.46	425,876.33	59,957.65	390,447.79	.....	35,428.54
New Mexico-Texas: Rio						
Grande	71,500.00	76,500.00	76,491.00	76,491.00	.....	9.00
Oregon: Umatilla	65,142.17	406,632.51	51,583.91	356,599.38	.....	50,033.13
Oregon-California: Klamath	65,525.88	567,811.58	61,373.28	537,270.01	.....	30,541.57
South Dakota: Belle Fourche	117,996.04	749,203.60	14,747.62	477,672.39	219.15	271,312.06
Utah: Strawberry Valley	120,520.50	476,345.47	82,707.41	396,396.76	.....	79,948.71
Washington:						
Okanogan	5,483.55	56,194 73	13,154.51	54,281.38	.....	1,913.35
Yakima	383,498.40	3,349,036.75	336,419.84	3,139,467.63	28,715.95	180,853.17
Wyoming: Shoshone	116,358.22	802,203.36	27,573.40	610,898.05	518.67	190,786.64
	2,422,967.49	17,763,730.67	2,027,689.70	14,961,124.17	265,384.04	2,537,222.46
Paid in advance of due dates	.....	.....	[3] 307,116.09	307,116.09	.....	.....
Totals	.....	.....	2,334,805.79	15,268,240.26	.....	.....

[1] Contra. [2] From sale of land and plant. [3] Includes $63,803.78 prior years.

NOTE.—Uncollected balance June 30, 1923, 14.2 per cent of total accruals to date.

TABLE 9.—*Operation and maintenance repayments.*[1]

[Public notice.]

State and project.	Due.		Collected.			Uncollected June 30, 1923.
			Cash.		Other credits to June 30, 1923.	
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.		
Arizona-California: Yuma	$235,559.45	$1,120,280.38	$249,381.48	$923,705.72	$17,315.37	$179,259.29
California: Orland	37,725.63	210,932.07	35,781.89	200,313.78	10,399.67	218.62
Idaho:						
Boise	279,583.71	1,499,239.50	222,170.41	1,206,761.29	41,525.01	250,953.20
Boise (drainage)	141,873.29	342,078.62	119,334.36	186,336.87	3,169.14	152,572.61
Minidoka	144,588.53	1,359,542.28	115,024.07	1,114,591.30	67,958.01	176,992.97
Montana:						
Huntley	45,902.54	424,162.62	31,960.04	313,915.45	7,517.39	102,729.78
Sun River	13,432.44	162,915.30	7,935.10	122,618.61	2,870.50	37,426.19
Montana-North Dakota:						
Lower Yellowstone	49,932.24	194,102.80	17,024.45	62,359.28	4.63	131,738.89
Nebraska-Wyoming: North Platte	203,423.00	1,792,629.38	99,284.45	1,313,022.67	41,288.98	438,317.73
Nevada: Newlands	117,626.63	804,999.26	97,741.12	688,981.95	23,878.12	92,139.19
New Mexico: Carlsbad	53,847.83	447,736.24	68,098.91	391,380.60	6,129.90	50,225.74
New Mexico-Texas: Rio Grande	172,472.90	389,078.40	172,472.90	384,591.96	4,486.44	.....
North Dakota:						
Buford-Trenton	.....	2,317.41	.....	2,317.41	.....	.....
Williston	25,899.10	71,920.30	1,370.00	26,677.75	.....	45,242.55
Oregon: Umatilla	28,927.06	279,861.19	30,736.24	244,913.98	3,286.43	31,660.78
Oregon-California: Klamath	63,819.61	492,906.92	50,433.74	411,431.46	30,059.60	51,415.86
South Dakota: Belle Fourche	98,745.18	870,863.27	17,435.61	513,490.05	12,452.64	344,920.58
Utah: Strawberry Valley	53,773.88	277,137.19	49,445.02	240,986.27	8,354.09	27,796.83
Washington:						
Okanogan	35,991.50	220,967.53	48,844.75	214,634.33	2,614.61	3,718.59
Yakima	265,917.99	2,204,765.88	259,025.22	2,057,779.02	29,070.62	117,916.24
Wyoming: Shoshone	72,290.93	608,112.93	23,913.68	405,060.65	14,648.86	188,403.42
	2,141,333.44	13,776,549.47	1,717,413.44	11,025,870.40	327,030.01	2,423,649.06
Paid in advance of due dates	.....	.....	19,188.42	19,188.42	.....	.....
Penalty and interest	.....	.....	66,735.43	215,153.90	3,735.55	.....
Totals	.....	.....	1,803,337.29	11,260,212.72	.....	.....

SUMMARY OF PENALTIES AND DISCOUNTS.

Item.	Fiscal year 1923.			To June 30, 1923.		
	Cash.	Other.	Total.	Cash.	Other.	Total.
Penalties	$66,735.43	$2,635.87	$67,371.30	$215,153.90	$3,735.55	$218,889.45
Discounts	.....	.....	24,933.20	.....	.....	220,297.37
Net	.....	.....	42,438.10	.....	.....	[1] 1,407.92

[1] Contra.

NOTE.—Uncollected balance June 30, 1923, 17.5 per cent of total accruals to date.

TABLE 10.—*Operation and maintenance repayments.*

[Water rentals prior to public notice.]

State and project.	Due.		Collected.			Uncollected June 30, 1923.
			Cash.		Other credits to June 30, 1923.	
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June, 1923.		
Arizona: Salt River		$2,246,726.01		$2,246,726.01		
Arizona-California: Yuma	$33,231.33	495,992.84	$30,429.09	490,848.77	$292.01	$4,852.06
California: Orland	229.50	120,384.00	229.50	120,384.00		
Colorado:						
Grand Valley	51,000.98	219,829.34	44,727.64	184,502.13	2,422.58	32,904.63
Uncompahgre	10,531.97	1,182,776.10	53,366.30	1,136,588.52	9,835.62	36,351.96
Idaho:						
Boise	18,767.97	740,015.18	16,756.50	722,167.21	4,720.50	13,127.47
King Hill	28,726.24	52,230.73	25,978.80	49,369.37		2,861.36
Minidoka	2,916.32	270,803.36	2,648.72	267,301.53	3,234.23	267.60
Montana:						
Huntley	1,181.09	6,340.36	1,061.35	6,132.44		207.92
Milk River	19,637.09	176,106.28	18,608.63	152,148.26	487.21	23,470.81
Sun River	13,357.02	48,244.88	8,456.00	21,121.30	230.69	26,892.89
Montana-North Dakota: Lower Yellowstone	1,242.60	123,265.68	2,400.93	121,869.18		1,396.50
Nebraska-Wyoming: North Platte	8,883.99	168,841.72	9,791.12	168,255.61	2.00	584.11
Nevada: Newlands	1,282.95	16,936.22	1,348.20	16,916.72		19.50
New Mexico:						
Carlsbad	383.25	19,241.69	383.25	19,241.69		
Hondo		9,165.19		9,129.70		35.49
New Mexico-Texas: Rio Grande	19,374.19	1,109,475.44	31,598.69	1,075,447.26		34,028.18
North Dakota:						
Buford-Trenton		31.75		31.75		
Williston		2,117.28		2,117.28		
Oregon: Umatilla	1,314.15	32,100.24	2,290.19	32,100.24		
Oregon-California: Klamath	824.01	43,013.63	871.87	42,537.83		475.80
South Dakota: Belle Fourche	408.72	5,060.10	408.72	4,910.10		150.00
Utah: Strawberry Valley		8,388.39		8,388.39		
Washington:						
Okanogan	474.58	110,450.85	362.40	106,222.69	2,584.19	1,643.97
Yakima	4,151.29	140,588.96	4,277.38	139,974.13		614.83
Wyoming: Shoshone	847.28	12,366.05	1,063.31	12,113.90		252.15
	218,766.52	7,360,492.27	257,058.59	7,156,546.01	23,809.03	180,137.23

TABLE 11.—*Rentals of power and light.*

State and project.	Due.		Collected.			Uncollected June 30, 1923.
			Cash.		Other credits to June 30, 1923.	
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.		
Arizona: Salt River		$998,411.03		$998,411.03		
Idaho:						
Boise	$10,952.20	117,279.80		96,424.61	$20,855.19	
Minidoka	111,246.46	691,771.30	$111,805.70	663,772.58	4,812.08	$23,186.64
Nebraska-Wyoming: North Platte	28,936.02	83,609.48	26,517.79	68,072.64	12,393.30	3,143.54
Nevada: Newlands	23,226.19	184,360.56	23,328.63	157,512.41	25,487.75	1,360.40
New Mexico-Texas: Rio Grande		2,243.33		2,243.33		
North Dakota: Williston	49,570.46	365,647.50	49,814.46	362,133.00		3,514.50
Oregon-California: Klamath	2,214.83	8,234.83	2,214.83	8,234.83		
Utah: Strawberry Valley	23,961.48	127,048.89	23,741.72	125,210.42		1,838.47
Washington:						
Okanogan		1,754.71		1,754.71		
Yakima		3,635.33		3,635.33		
Wyoming: Shoshone	5,710.01	6,522.71	5,531.10	6,025.20		497.51
	255,817.65	2,590,519.47	242,954.23	2,493,430.09	63,548.32	33,541.06

TABLE 12.—*Rentals of grazing and farming lands.*

State and project.	Due.		Collected.			Uncollected June 30, 1923.
			Cash.		Other credits to June 30, 1923.	
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.		
Arizona: Salt River	.....	$19,373.14	.....	$19,373.14	.....	.....
Arizona-California: Yuma	$2,531.99	11,856.10	$3,010.54	11,670.93	.....	$185.17
California: Orland	.....	32.00	.....	32.00	.....	.....
Colorado:						
Grand Valley	20.00	229.00	20.00	167.00	.....	62.00
Uncompahgre	45.00	152.00	45.00	152.00	.....	.....
Idaho:						
Boise	[1] 255.55	20,147.79	[1] 233.62	20,059.09	.....	88.70
Minidoka	[1] 322.82	33,622.87	662.24	29,367.51	.....	4,255.36
Montana:						
Huntley	832.78	12,195.66	1,261.53	11,659.99	.....	535.67
Milk River	3,955.56	27,139.71	4,249.16	26,732.49	$20.88	386.34
Sun River	3,216.26	31,332.81	3,370.14	26,725.14	.....	4,607.67
Montana-North Dakota: Lower Yellowstone	273.25	2,974.62	195.25	2,863.62	.....	111.00
Nebraska-Wyoming: North Platte	9,914.39	80,676.92	8,637.46	74,434.86	.....	6,242.06
Nevada: Newlands	532.33	24,584.62	124.73	24,138.62	.....	446.00
New Mexico: Carlsbad	1,653.89	11,695.93	1,413.79	11,161.49	.....	534.44
New Mexico-Texas: Rio Grande	288.20	1,800.20	281.20	1,785.20	.....	15.00
North Dakota:						
Buford-Trenton	.....	423.93	.....	423.93	.....	.....
Williston	.....	249.98	.....	249.98	.....	.....
Oregon: Umatilla	570.90	1,579.50	520.90	1,529.50	.....	50.00
Oregon-California: Klamath [2]	143,053.67	158,406.16	145,306.39	157,962.16	.....	444.00
South Dakota: Belle Fourche	318.77	318.77	318.77	318.77	.....	
Utah: Strawberry Valley	15,250.50	135,781.16	15,250.50	135,781.16	.....	.....
Washington:						
Okanogan	50.00	722.50	50.00	722.50	.....	.....
Yakima	1,741.73	21,280.04	1,729.73	21,034.74	.....	245.30
Wyoming: Shoshone	1,198.02	8,468.34	1,142.27	8,107.34	.....	361.00
Secondary projects	12,728.05	154,022.17	11,923.23	110,065.77	42,497.67	1,458.73
Total	197,596.92	759,065.92	199,279.21	696,518.93	42,518.55	20,028.44

[1] Contra.
[2] See project statement for adjustment.

TABLE 13.—*Statement of miscellaneous balances due and unpaid (not including construction and operation and maintenance repayments, water rentals, power and light, and grazing and farm land rentals).*

State and project.	Amount	State and project.	Amount.
Arizona-California: Yuma	$11,924.65	Oregon:	
Colorado:		Baker	.....
Grand Valley	165.00	Umatilla	$332.98
Uncompahgre	186.18	Oregon-California: Klamath	2,602.89
Idaho:		South Dakota: Belle Fourche	366.26
Boise	3,182.92	Utah: Strawberry Valley	76.34
King Hill	1,999.40	Washington:	
Minidoka	402.96	Okanogan	1,136.14
Montana:		Yakima	1,194.72
Huntley	212.32	Wyoming:	
Milk River	1,169.14	Riverton	16,153.35
Sun River	1,606.81	Shoshone	10,056.34
Montana-North Dakota: Lower Yellowstone	70.80	Secondary projects	33,643.54
Nebraska-Wyoming: North Platte	4,561.18	Washington office	7,722.43
Nevada: Newlands	1,435.81	Denver office	18,355.10
New Mexico: Carlsbad	87.51	Field legal	5,584.00
New Mexico-Texas: Rio Grande	63.76	Total	124,431.92
North Dakota: Williston	139.39		

TABLE 14.—*Voucher transactions, all funds, and net investment, as of June 30, 1923, reclamation fund projects, including Wind River Indian (Riverton).*

State and project.	Expenditures.[1]		Collections.[2]		Net investment.	
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.
Arizona: Salt River		$14,671,484.24	$307,327.63	$5,041,492.86	[3] $307,327.63	$9,629,991.38
Arizona-California:						
Yuma	$429,316.86	12,072,082.49	501,442.47	3,029,643.57	[3] 72,125.61	9,042,438.92
California: Orland	80,641.28	1,478,492.80	105,974.83	599,502.60	[3] 25,333.55	878,990.20
Colorado:						
Grand Valley	329,949.05	4,451,153.44	52,059.58	309,103.44	277,889.47	4,142,050.00
Uncompahgre	141,243.28	8,132,558.83	90,498.39	1,398,614.72	50,744.89	6,733,944.11
Idaho:						
Boise	760,260.37	15,985,438.42	686,608.60	4,237,131.85	73,651.77	11,748,306.57
King Hill	373,484.18	1,988,523.89	35,737.71	103,498.26	337,746.47	1,885,025.63
Minidoka	909,814.89	9,900,691.13	784,230.87	5,124,961.81	125,584.02	4,775,729.32
Kansas: Garden City		390,495.54	363.50	58,002.27	[3] 363.50	332,493.27
Montana:						
Huntley	39,740.20	2,420,880.04	55,100.65	762,871.23	[3] 15,360.45	1,658,008.81
Milk River	228,058.26	7,221,832.02	35,572.80	347,345.03	192,485.46	6,874,486.99
Sun River	250,443.19	4,650,012.70	31,217.63	433,636.00	219,225.56	4,216,376.70
Montana-North Dakota:						
Lower Yellowstone	114,612.31	4,040,218.62	20,472.78	299,525.49	94,139.53	3,740,693.13
Nebraska-Wyoming:						
North Platte	1,156,383.23	16,491,803.84	360,342.91	3,682,415.94	796,040.32	12,809,387.90
Nevada: Newlands	424,595.83	8,543,653.74	169,276.49	1,609,105.20	255,319.34	6,934,548.54
New Mexico:						
Carlsbad	33,711.86	1,950,750.07	143,464.57	889,470.95	[3] 109,752.71	1,061,279.12
Hondo		406,744.36		34,841.70		371,902.66
New Mexico-Texas: Rio Grande	866,385.47	14,609,757.62	302,464.66	2,117,191.84	563,921.81	12,492,565.78
North Dakota:						
Buford-Trenton	[3] 959.54	311,229.60	26.00	17,432.93	[3] 985.54	293,796.67
Williston	74,583.87	1,211,624.19	52,345.33	412,450.03	22,238.54	799,174.16
Oregon: Umatilla	114,963.84	3,405,897.00	90,694.37	824,264.61	24,269.47	2,581,632.39
Oregon-California: Klamath	500,207.55	4,877,204.65	138,081.71	1,224,499.68	362,125.84	3,652,704.97
South Dakota: Belle Fourche	44,790.21	4,613,579.02	37,500.14	1,078,483.76	7,290.07	3,535,095.26
Utah: Strawberry Valley	40,423.90	4,186,740.62	178,222.61	1,128,320.75	[3] 137,798.71	3,058,419.87
Washington:						
Okanogan	67,169.89	1,828,633.25	82,743.93	424,130.57	[3] 15,574.04	1,404,502.68
Yakima	1,238,392.52	15,497,451.79	657,018.49	6,018,561.23	581,374.03	9,478,890.56
Wyoming:						
Riverton	476,505.57	1,331,697.01	7,449.84	27,479.02	469,055.73	1,304,217.99
Shoshone	862,702.04	9,485,609.97	80,010.66	1,271,764.92	782,691.38	8,213,845.05
Secondary (including Deschutes, Imperial Valley, and Baker)	271,153.29	1,995,642.38	88,396.58	575,028.64	182,756.71	1,420,613.74
Denver office (net not transferred to projects)[4]	[3] 7,608.25	201,906.21	16,836.44	126,449.41	[3] 24,444.69	75,456.80
Field legal (net not transferred to projects)[4]	4,383.65	11,140.23	2,491.02	2,610.89	1,892.63	8,529.34
Washington office (net not transferred to projects)[4]	22,891.54	357,696.54	29,955.22	287,702.91	[3] 7,063.68	69,993.63
Indian projects[5]		2,997,829.24		2,997,829.24		
Civil-service retirement fund (unabsorbed)[6]	4,853.11	6,001.73			4,853.11	6,001.73
Total	9,853,094.45	181,726,457.22	5,143,928.41	46,495,363.35	4,709,165.04	135,231,093.87

[1] Expenditures from reclamation fund, increase of compensation, judgments, court of claims, Rio Grande Dam appropriation and Wind River Indian (Riverton). Amounts given for each project include net (transfers from other projects less transfers to other projects).

[2] Collections creditable to increase of compensation and Rio Grande Dam appropriation are included in the expenditure column as contra. Other collections are shown separately.

[3] Contra.

[4] See following analysis.

[5] Expended for Bureau of Indian Affairs from reclamation fund and later reimbursed by congressional appropriation.

[6] Analysis of civil-service retirement fund:

Transferred from reclamation fund to civil-service retirement fund	$71,785.00
Deducted from pay of employees	65,783.27
Unabsorbed balance	6,001.73

TABLE 14.—*Voucher transactions, all funds, and net investments, as of June 30, 1923 reclamation fund projects, including Wind River Indian (Riverton)*—Continued.

ANALYSIS OF EXPENDITURES AND INVESTMENT BY FUNDS.

Item.	Expenditures.		Collections.		Net investment.	
	Fiscal year 1921.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.
Reclamation fund	$9,583,596.95	$177,338,573.46	$5,143,928.22	$46,494,377.70	$4,439,668.73	$130,844,195.76
Increase of compensation (net)[7]	268,527.81	2,477,374.49	.....	.....	268,527.81	2,477,374.49
Judgments, Court of Claims	.....	550,347.58	.....	.....	.....	550,347.58
Rio Grande Dam appropriation	.....	1,000,000.00	.....	.....	.....	1,000,000.00
Wind River Indian (Riverton)	969.69	360,161.69	.19	985.65	969.50	359,176.04
Total	9,853,094.45	181,726,457.22	5,143,928.41	46,495,363.35	4,709,166.04	135,231,093.87

[7] Includes $17,761.73 increase of compensation, Wind River Indian (Riverton).

NOTE.—Denver, Washington, and field legal offices investment represents under or over distributed expenditures to projects analyzed as follows:

	Denver.[8]		Field legal.[8]		Washington.	
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.
Reclamation fund:						
Disbursements	$192,835.93	$1,304,043.22	$36,292.14	$483,506.73	$226,220.42	$4,967,208.60
Less—						
Net transfers	196,736.50	1,102,121.59	32,250.56	472,598.56	189,616.65	4,599,238.06
Collections	17,156.50	126,449.41	2,170.96	2,610.89	29,955.22	287,702.91
Total	213,893.00	1,228,571.00	34,421.52	475,209.45	219,571.87	4,886,940.97
Net investment	[3] 21,057.07	75,472.22	1,870.62	8,297.28	6,648.55	80,267.63
Increase of compensation:						
Disbursements	11,649.85	82,553.54	1,480.00	2,432.08	15,789.59	90,717.40
Less—						
Net transfers	14,318.43	77,130.58	1,359.12	2,072.68	23,652.03	89,303.01
Collections	715.65	5,438.38	102.26	127.34	849.79	6,688.39
Total	15,034.08	82,568.96	1,461.38	2,200.02	24,501.82	95,991.40
Net investment	[3] 3,384.23	[3] 15.42	18.62	232.06	[3] 8,712.23	[3] 5,274.00
Investment, all funds	[3] 24,441.30	75,456.80	1,889.24	8,529.34	[3] 2,063.68	74,993.63

[3] Contra.
[8] Field legal previously included in Denver office.

TABLE 15.—*Voucher transactions and net investment as of June 30, 1923, other than reclamation fund projects.*

	Expenditures.		Collections.		Net investment.	
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.
Mesa division, Yuma project:						
Auxiliary	$174,015.97	$675,588.43	[1] $194,845.45	$752,125.21	[2] $20,829.48	[2] $76,536.78
Increase of compensation fund (net)	1,879.17	14,341.55			1,879.17	14,341.55
Total	175,895.14	689,929.98	194,845.45	752,125.21	[2] 18,950.31	[2] 62,195.23
Drainage and cut-over fund		100,279.59		464.51		99,815.08
Increase of compensation fund (net)		728.94				728.94
Total		101,008.53		464.51		100,544.02
General investigations, Reclamation Service, 1923–Dec. 31, 1924, fund	16,408.24	16,408.24			16,408.24	16,408.24
Increase of compensation fund (net)	304.81	304.81			304.81	304.81
Total	16,713.05	16,713.05			16,713.05	16,713.05
Indian projects (Montana):						
Blackfeet—						
Indian funds	50,663.06	1,248,760.37	13,906.08	52,858.32	36,756.98	1,195,902.05
Increase of compensation fund (net)	2,662.36	14,227.21			2,662.36	14,227.21
Judgments, Court of Claims		29.91				29.91
Total	53,325.42	1,263,017.49	13,906.08	52,858.32	39,419.34	1,210,159.17
Flathead—						
Indian funds	368,388.50	5,029,402.91	46,626.86	229,378.70	321,761.64	4,800,024.21
Increase of compensation fund (net)	8,401.32	145,104.27			8,401.32	145,104.27
Total	376,789.82	5,174,507.18	46,626.86	229,378.70	330,162.96	4,945,128.48
Fort Peck—						
Indian funds	16,741.90	906,963.52	1,672.05	25,389.17	15,069.85	881,574.35
Increase of compensation fund (net)	1,069.15	17,245.28			1,069.15	17,245.28
Judgments, Court of Claims		168.34				168.34
Total	17,811.05	924,377.14	1,672.05	25,389.17	16,139.00	898,987.97

[1] Actual collections during year $121,760.35
Land sales to June 30, 1922, transferred to project accounts 73,085.10

Total 194,845.45

[2] Contra.

DISCUSSION OF PROJECTS.

PRIMARY PROJECTS.

ARIZONA, SALT RIVER PROJECT.

C. C. CRAGIN, Salt River Valley Water Users' Association, general superintendent and chief engineer, Phoenix, Ariz.

[The operation of the Salt River project was turned over to the water users on November 1, 1917. The Bureau of Reclamation desires to express its appreciation of the cooperation of the Salt River Valley Water Users' Association in furnishing the following statement concerning the operations of the project during the fiscal year.]

The Salt River project is situated in Maricopa and Gila counties, Arizona, and is populated by 80,000 people living on some 5,000 farms and in 14 towns. The water supply is from the Salt and Verde Rivers, augmented by wells located in various parts of the valley. Records show an average annual rainfall of 8.34 inches over a period of 35 years and a range of temperature from 22° to 117° F. The soil is sandy loam and silt and the length of the irrigation season is 365 days, October 1 to September 30. The principal crops raised on the project are alfalfa, cotton, grain, and citrus and deciduous fruits, and marketing points are Phoenix and other Arizona towns, Pacific coast cities, and the eastern market.

The Roosevelt Reservoir, created by the building of Roosevelt Dam at the confluence of Tonto Creek and Salt River, is 70 miles northeast of Phoenix. The stored water is carried down the Salt River to the Granite Reef diversion dam, which is situated approximately 4 miles below the mouth of the Verde River, where, together with such water as may be discharged from the Verde, it is diverted to the north and south side canal systems. The water supply of the canals on the north side of the Salt River is further augmented by the water diverted at Joint Head diversion dam. There are now 8 pumping plants in operation, with an approximate capacity of 9 second-feet each, 81 pumping plants with capacities ranging from 1 to 4 second-feet, and 1 pumping plant with 100 second-feet capacity for lifting water 40 feet above the gravity system. The present canal and lateral system comprises 872 miles, together with 155 miles of waste ditches, 4.85 miles of open drains, and 5.30 miles of closed drains. Power is generated at the Roosevelt power plant from the stored water. There are four other power plants at various locations on the project—the South Consolidated, Arizona Falls, Cross Cut, and Chandler. The power derived from these plants is used for pumping water for irrigation, drainage, and for commercial purposes.

SUMMARY OF DATA FOR SALT RIVER PROJECT TO END OF FISCAL YEAR 1923.

Areas and crops:		
Irrigable acreage of project on completion		213,170
Public land entered to June 30, 1923	16,170	
Private land, June 30, 1923	197,000	
Acreage irrigated, season of 1922		204,590
Acreage cropped under irrigation, season of 1922		189,184
Value of irrigated crops, season of 1922		$15,497,141.00
Value of irrigated crops per acre cropped		$81.90
Finances:		
Appropriations—		
Fiscal year 1923, amount of congressional authorizations $5,000		
Unencumbered balance, June 30, 1923		$5,000
Fiscal year 1924, amount specified in appropriation act		$5,000

	Fiscal year 1923.	To June 30, 1923.
Irrigation works:		
Net construction cost		$10,548,119.28
Less—		
Loss	$83.14	382,097.31
Water-right contracts		10,166,021.97
Penalties	[1]83.14	
		10,548,119.28

[1] Contra.

Summary of data for Salt River project to end of fiscal year 1923—Continued.

Investment to date.	Reclamation fund.	Increase of compensation (net).	Total.
Disbursement and net transfers	$14,662,033.96	$9,450.28	$14,671,484.24
Less collections	5,041,492.86	.....	5,041,492.86
Net investment June 30, 1923	9,620,541.10	9,450.28	9,629,991.38

Status of current accounts receivable as of June 30, 1923.

	Due.		Collected.	
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.
To return net construction cost:				
Water-right charges	[1] $332,961.32	$886,961.32	$276,244.19	$886,961.32
Construction charges paid in advance	.....	.....	4,854.50	4,854.50
Revenues:				
Rentals of irrigating water	.....	2,246,726.01	.....	2,246,726.01
Rentals of power and light	.....	998,411.03	.....	998,411.03
Rentals of grazing and farming lands	.....	19,373.14	.....	19,373.14
Total	.....	3,264,510.18	.....	3,264,510.18
Other miscellaneous collections	.....	.....	26,228.94	885,166.86
Grand total collections	.....	.....	307,327.63	5,041,492.86

[1] Adjustment of charges due.

ACTIVITIES DURING FISCAL YEAR.

The past year has seen notable progress in project development. The waste ditch program is two-thirds complete, 43.5 miles of new ditches having been built, making a total of 155 miles. New irrigation laterals totaling 8.7 miles were added to the distribution system, and 1.5 miles of closed drain were constructed for drainage, the aggregate length of canals, ditches, and drains maintained by the project being 1,037 miles. There were installed 9,922 linear feet of culverts on waste ditches and laterals. Four additional drainage wells were put in operation, totaling 1,028 feet in depth.

Work on the enlargement of the Eastern canal to carry 1,500 second feet was practically finished. The water for the Consolidated canal will be supplied to it at the end of this enlarged section of the Eastern through the new power plant (now about 60 per cent complete) at this point, thus permitting the abandonment of the portion of the Consolidated above the new plant seriously menaced from floods of the Salt River.

A long-standing menace has been removed by the completion of the Cave Creek flood-control dam, a multiple-arch concrete structure 1,700 feet long and 60 feet high, costing over $550,000, of which $116,000 was contributed by the water users' association.

Considerable progress has been made in the improvement of the power system, the plans for the extension of which contemplate the ultimate expenditure of $6,000,000 for approximately 50,000 horsepower. In the existing system many serious sources of interruption in service have been eliminated. At Roosevelt there were installed current limiting reactors in the main leads of the 1,500 KVA gener-

ators, new induction type relays for all generator oil circuit breakers, and lead-covered cables for transformer leads. A spare 350 KVA transformer was purchased. At the Cross-cut plant the main leads of all generators were changed to lead-covered single-conductor cables, the buckets were renewed on the No. 6 Pelton wheel, and two 225-kilowatt frequency changers were installed to supply current to the town of Tempe. All suspension type insulators were tested on the 40,000-volt lines and 754 faulty units replaced with new.

A bond issue of $1,800,000 was sold by the association to provide funds for the first part of the power extension program known as Mormon Flat Development No. 1 consisting of the increase of 270,000 acre-feet in the capacity of Roosevelt Reservoir by the installation of gates in the spillways (recently completed), the construction of the 200-foot Mormon Flat Dam creating 90,000 acre-feet storage for regulating purposes (construction well under way), and the installation of an additional 7,500 KVA generating unit at Roosevelt.

Operation data, Salt River project.

Item.	1920–21	1921–22	1922–23
Acreage for which works were prepared to supply water	213,000	213,168	213,170
Acreage irrigated	205,060	203,346.50	204,590.50
Miles of canals operated	852.75	863.35	863.35
Water diverted (acre-feet)	[1] 1,371,983	1,231,031	[2] 1,215,035
Water delivered to land (acre-feet)	594,615	534,526.07	
Acre-feet per acre for area under cultivation	2.90	[3] 2.635	[3] 2.770

[1] Includes 307,455 acre-feet wasted; water for Salt River Valley Water Users' system only; outside water deducted.
[2] Net Salt River Valley Water Users' Association, inclusive of 185,000 acre-feet flood water diverted for power.
[3] Amount of water per acre actually charged for; 20 per cent less than the amount of water delivered to the land.

Settlement data, Salt River project.

Item.	1920	1921	1922
Total number of farms on project (when completed)	[1] 4,700	5,000	5,000
Number of farms reported	[1] 4,200	5,000	5,000
Population	[2] 31,600	33,600	36,000
Number of towns	14	14	14
Population	39,795	42,500	44,000
Total population of towns and farms	71,395	76,100	80,000
Number of public schools	[1] 57	60	60
Number of churches	62	65	65
Number of banks	20	20	20
Total capital stock of banks	$1,752,500.00	$1,755,500	$1,755,500
Amount of deposits	$24,426,056.95	$17,776,336	$21,331,600
Number of depositors	[1] 35,000	38,000	39,500

[1] Estimated.
[2] Includes population within town-site areas.

ARIZONA-CALIFORNIA, YUMA PROJECT.

PORTER J. PRESTON, project manager, Yuma, Ariz.

The Yuma project, exclusive of the Mesa division, comprises 65,000 acres of irrigable land for a distance of 28 miles from the boundary between Arizona and Mexico, in Yuma County, Ariz., and Imperial County, Calif. The water supply is diverted from the Colorado River at Laguna Dam 10 miles northeast of Yuma on the California side and is carried under the river at Yuma by an inverted siphon. Building charges are $55, $66, $75, $77, and $90 per acre for gravity lands. The limit of area of farm units is 40 acres. The duty of water averages 3 acre-feet at the farm. The soils are rich alluvium bottom land. The principal crops are cotton and alfalfa. The irrigation season is 365 days. The average temperatures for 29 years are: High, 115°; low, 28°; rainfall, 40-year average, 3.1 inches.

The Mesa division comprises about 45,000 acres of mesa land lying about 80 feet above the valley. The soil is sandy, the climate frostless and well adapted to the growing of citrus fruit and other semitropical plants. Water is to be supplied by pumping. The first unit of 6,300 acres is now being developed.

SUMMARY OF DATA FOR YUMA PROJECT TO END OF FISCAL YEAR 1923.

Areas and crops:		
Irrigable acreage when project is complete		110,000
Public land entered to June 30, 1923	17,493	
Public land open to entry June 30, 1923	853	
Public land withdrawn on June 30, 1923	33,284	
Indian land June 30, 1923	8,200	
Private land June 30, 1923	50,170	
Acreage bureau could supply season of 1922		67,200
Acreage irrigated season of 1922		55,770
Acreage cropped under irrigation seaon of 1922		53,970
Value of irrigated crops season of 1922 (crop census)		$2,682,500
Value of irrigated crops per acre cropped		$49.70
Finances:		
Appropriations—		
Fiscal year 1923—amount of congressional authorizations	$600,913.19	
Disbursements and liabilities	435,044.02	
Unencumbered balance June 30, 1923		$165,869.17
Fiscal year 1924 amount specified in appropriation act		$430,000.00

	Fiscal year 1923.	To June 30 1923.
Irrigation works:		
Net construction cost	$84,389.70	$9,026,572.84
Less—		
Funds advanced		101,113.89
Water-right contracts: Project lands 56,568 acres	31,113.75	5,642,469.28
Total	31,113.75	5,743,583.17
Balance	53,275.95	3,282,989.67

	Calendar year 1922.	To Dec. 31, 1922.	Fiscal year 1923.	To June 30, 1923.
Net operation and maintenance cost	$208,813.90	$1,515,442.58	$263,211.29	$1,667,934.67
Less:				
Charges billed or contracted	234,253.92	1,114,502.45	235,559.45	1,120,280.38
Penalties	6,817.81	14,955.45	13,576.00	25,192.31
Discounts	[1] 2,923.54	[1] 9,116.41	[1] 4,347.96	[1] 13,302.90
Total	238,178.19	1,120,341.49	244,747.49	1,132,169.79
Balance	[1] 65.71	395,102.09	18,463.80	535,764.88

[1] Contra.

Summary of data for Yuma project to end of fiscal year 1923—Continued.

Investment, to date.	Reclamation fund.	Increase of compensation (net).	Total.
Disbursements and net transfers	11,929,446.84	142,635.65	12,072,082.49
Less collections	3,029,643.57		3,029,643.57
Net investment June 30, 1923	8,899,803.27	142,635.65	9,042,438.92

Status of current accounts receivable as of June 30, 1923.

	Due.		Collected.			Uncollected June 30, 1923.
			Cash.		Other credits to June 30, 1923.	
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.		
To return net construction cost:						
Funds advanced		$101,113.89		$101,113.89		
Water right charges	$168,572.26	1,054,025.33	$153,666.89	979,436.52	$1,152.57	73,436.24
Total	168,572.26	1,155,139.22	153,666.89	1,080,550.41	1,152.57	73,436.24
Charges paid in advance			6,764.46	11,202.22	146.81	
To return net operation and maintenance costs:						
Operation and maintenance charges—						
Project lands (63,163 acres)	235,559.45	1,120,280.38	249,381.48	923,705.72	17,315.37	179,259.29
Charges paid in advance			3,091.73	3,951.23	59.35	
Penalties and interest			13,520.31	24,902.02	290.29	
Revenues:						
Rentals of irrigating water	33,231.33	495,992.84	30,429.09	490,848.77	292.01	4,852.06
Rentals of grazing and farming lands	2,531.99	11,856.10	3,010.54	11,670.93		185.17
Total	35,763.32	507,848.94	33,439.63	502,519.70	292.01	5,037.23
Miscellaneous uncollected						11,924.65
Other miscellaneous collections (reclamation fund			41,577.97	482,812.27		
Grand total collections			501,442.47	3,029,643.57		

Uncollected construction water right charges as of June 30, 1923, 7 per cent of total accruals.
Uncollected operation and maintenance charges as of June 30, 1923, 16 per cent of total accruals.

ACTIVITIES DURING FISCAL YEAR.

Construction on the main project was confined principally to drainage work; 4.4 miles of open drain were dug, involving the excavation of 121,200 cubic yards of earth. There were practically no seeped lands during the fiscal year.

All cleaning of the lateral system was done by machinery, four Ruth ditch cleaners being used for this purpose; it has also been found possible to use these machines on most of the main canals, replacing draglines at a considerable reduction in cost. By an arrangement with the water users' association, these machines were also made available for cleaning private ditches at cost. A total of 170.3 miles of canals were cleaned during the year. On September 2 a heavy rain damaged the main canal at the crossing of the Picacho wash, causing an expense of $15,000.

Construction work on the Mesa division consisted of the extension of the B-Main Canal a distance of 2.5 miles, the construction of 2.4 miles of earth laterals, the casting of 34,800 linear feet of concrete pipe, the laying of 9,500 linear feet of pipe laterals, and the construction of concrete turnouts; the season's work, which extends into the fiscal year 1924, will bring about 2,300 acres under water, making a total of 4,800 acres for which water is available. Public notice covering 454 acres was issued, making a total of 2,900 acres under public notice.

CROPS AND DEVELOPMENT.

The year was an improvement over the preceding one from an agricultural standpoint. Prices for cotton and alfalfa were such as to show better net returns to the growers; and the gross return from the cropped area was nearly 25 per cent greater than for the previous year. Spring crop prospects were excellent; it appeared that both the alfalfa seed and cotton crops would be good, with very fair prices. Considerable interest was aroused in live stock and dairying and a start was made at growing winter vegetables. The latter effort was not entirely successful on account of poor marketing arrangements, but most of the growers felt that there was a good prospect of success along this line and were determined to make another attempt during the coming winter. It has been demonstrated that vegetables of very fine quality can be grown, and if the crop can be properly marketed there is every prospect that a successful industry can be built up.

During the latter part of the year a campaign was begun to bring in new settlers and cut down some of the larger holdings to smaller farms which can be worked intensively.

Operation data, Yuma project, by calendar years.

Item.	1917	1918	1919	1920	1921	1922
Area for which bureau was prepared to supply water	73,000	73,000	[1] 70,000	[1] 65,000	[1] 65,000	67,200
Acreage irrigated	36,956	45,670	53,284	54,550	52,400	55,770
Miles of canal operated	335	338	323.2	323.2	323.2	334.2
Water diverted (acre-feet) [2]	337,597	314,900	478,185	468,900	482,000	546,634
Water delivered to land (acre-feet)	136,541	150,229	155,417	160,330	140,900	140,307
Acre-feet to acre for area under cultivation	3.7	3.3	2.9	2.94	2.69	2.59

[1] Reduction due to exclusion of North Gila Valley land and lands along levee subject to seepage.
[2] Of the water diverted, from 100,000 to nearly 200,000 acre-feet each year are wasted, of which the largest part flows into the Colorado River at the Colorado spillway above Yuma, and this water can be diverted for irrigation farther down the river.

Settlement data, Yuma project.

Item.	1917	1918	1919	1920	1921	1922
Total number of farms on project (when completed)	4,000	4,000	5,190	5,750	5,750	5,750
Number of farms reported	900	1,185	1,225	1,230	1,211	1,216
Population	2,700	4,300	5,000	5,100	4,800	4,200
Number of towns	6	6	6	6	6	6
Population	6,735	7,590	7,600	7,110	6,665	6,700
Total population of towns and farms	9,435	11,890	12,600	12,210	11,465	10,900
Number of public schools	20	20	18	[1] 15	16	20
Number of churches	9	10	11	[2] 23	[2] 23	[2] 24
Number of banks	4	4	6	6	5	5
Total capital stock	.....	$175,000	$255,000	$255,000	$230,000	$280,000
Amount of deposits	.....	$1,321,468	$1,923,287	$2,100,000	$1,927,000	$3,095,800
Number of depositors	.....	4,572	5,288	9,175	5,900	6,382

[1] Reduction due to consolidation.
[2] Religious organizations; figures prior to 1920 relate to church buildings.

CALIFORNIA, ORLAND PROJECT.

R. C. E. WEBER, project manager, Orland, Calif.

The Orland project is located in Glenn and Tehama Counties, with reservoir in Colusa County. Stony Creek, the source of the water supply, has a drainage area of 735 square miles above the project diversion dams; the annual mean run-off near Fruto is 405,000 acre-feet.

The average elevation above sea level is 250 feet; the mean rainfall, 18.4 inches; and the temperature range, 21° to 114° F. The soil is sandy and gravelly loam, silt loam, and clay loam. The principal products are alfalfa, milo, citrus, and other fruits, nuts, and vegetables. The limit of area of farm units is 40 acres, except that original subscribers are qualified to hold up to 160 acres.

The irrigation plan provides for storage at East Park reservoir on Little Stony Creek with a feed canal 7 miles long connecting the reservoir with Stony Creek. For the irrigation of project lands located in the vicinity of Orland, water is diverted from Stony Creek by two diversion weirs into the South and North Canals, which serve 14,600 and 6,100 acres of land, respectively. Stored water from the reservoir is conveyed in the natural channel of Stony Creek to the project diversions. The distribution system consists of 2,000 structures and 146 miles of canals and laterals, 80 miles of which are concrete lined. The plan also includes a high-line canal, from which power may be developed for pumping. The present limits may be considered as a division of the Sacramento Valley project. It may be extended by constructing additional reservoirs on Stony Creek, the most feasible of which appears to be Millsite, near Fruto.

SUMMARY OF DATA FOR ORLAND PROJECT TO END OF FISCAL YEAR 1923.

Areas and crops:		
Irrigable acreage when project is complete		[1] 20,665
Private land, June 30, 1923	[1] 20,665	
Acreage irrigated, season of 1922		15,119
Acreage cropped under irrigation, season of 1922		11,803
Acreage dry-farmed, season of 1922		300
Value of irrigated crops, season of 1922		$565,560
Value of irrigated crops per acre cropped		$47.92
Value of dry-farmed crops, season of 1922		$3,000
Value of dry-farmed crops per acre cropped		$10
Finances:		
Appropriations—		
Fiscal year 1923, amount of congressional authorizations	$132,668.05	
Disbursements and liabilities	80,682.02	
Unencumbered balance June 30, 1923		$51,986.03
Fiscal year 1924, amount specified in appropriation act		$50,000.00

	Fiscal year 1923.	To June 30, 1923.
Irrigation works:		
Net construction cost	$33,836.74	$1,091,795.87
Less—		
Funds advanced	[2] 621.23	
Water-right contracts—		
Project lands (19,398.25 acres)	3,371.50	1,066,903.75
Other lands (approximately 775.8 acres) [3]	42,669.00	42,669.00
Returns pledged millsite investigations [4]	10,000.00	10,000.00
Total	55,419.27	1,119,572.75
Balance	[2] 21,582.53	[2] 27,776.88

[1] Includes 320 acres vested rights, 144 acres town, and 27 acres school sites.
[2] Contra.
[3] Includes lands paying charges but not covered by water-right contracts.
[4] Pledged by Orland Unit Water Users' Association in 1921.

Summary of data for Orland project to end of fiscal year 1923—Continued.

	Calendar year 1922.	To Dec. 31, 1922.	Fiscal year 1923.	To June 30, 1923.
Net operation and maintenance cost	$35,319.01	$200,510.23	$38,575.24	$218,610.67
Less—				
Charges billed or contracted	37,725.63	210,932.07	37,725.63	210,932.07
Penalties	2.63	33.70	6.70	37.77
Discounts (contra)	1,834.49	10,398.83	1,835.33	10,399.67
Total	35,893.77	200,566.94	35,897.00	200,570.17
Balance	[2] 574.76	[2] 56.71	2,678.24	18,040.50

Investment to date.	Reclamation fund.	Increase of compensation (net).	Total.
Disbursements and net transfers	$1,450,238.85	$28,253.95	$1,478,492.80
Less collections	599,502.60		599,502.60
Net investment, June 30, 1923	850,736.25	28,253.95	878,990.20

[2] Contra.

Status of current accounts receivable as of June 30, 1923.

	Due.		Collected.			Uncollected June 30, 1923.
			Cash.		Other credits to June 30, 1923.	
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.		
To return net construction cost:						
Funds advanced	[1] $621.23		[1] $621.23			
Water-right charges	66,566.00	$235,229.42	66,566.00	$235,229.42		
Total	65,944.77	235,229.42	65,944.77	235,229.42		
Charges paid in advance				5,385.16		
To return net operation and maintenance cost:						
Operation and maintenance charges, project lands (20,174.05 acres)	37,725.63	210,932.07	35,781.89	200,313.78	$10,399.67	$218.62
Penalties and interest			6.70	37.77		
Revenues:						
Rentals of irrigating water	229.50	120,384.00	229.50	120,384.00		
Rentals of grazing and farming lands		32.00		32.00		
Total	229.50	120,416.00	229.50	120,416.00		
Other miscellaneous collections (Reclamation fund)			4,011.97	38,120.47		
Grand total collections			105,974.83	599,502.60		

[1] Contra.

Uncollected construction water-right charges as of June 30, 1923, none.

Uncollected operation and maintenance charges as of June 30, 1923, 0.0047 per cent of total accruals for 1923, or 0.001 per cent of total to date.

ACTIVITIES DURING FISCAL YEAR.

Construction work consisted largely of placing 77,919 square yards of concrete lining on 9.1 miles of canals and laterals under supplemental construction. A number of minor structures were also built. Surveys and investigations in connection with the proposed development of additional storage on Stony Creek at

Millsite, which were undertaken at the request of the Board of Directors of the Orland Unit Water Users' Association and which were in progress at the beginning of the fiscal year, were concluded and a report was submitted to the board which referred the subject to the shareholders of the association at the annual election held in February, 1923. The shareholders by a decisive vote declined to accept an increased building charge for additional storage. The installation of an additional auxiliary outlet gate at East Park dam, designed to eliminate operating the original gates under high heads, constituted the largest item of maintenance work.

CROPS AND LIVE STOCK.

Ample water supply for the project was available and the year was one of good crop yields and favorable agricultural conditions.

A total of 15,119 acres or 75 per cent of the project area was irrigated during the season of 1922, representing an increase of 422 acres over the preceding season. Thirty new farms were brought under irrigation. The increased area consists largely of orchards, as alfalfa, although continuing to be the predominating crop on the project, is stationary in acreage. Shipments of orchard products assumed large proportions, six and one-half cars of almonds and six cars of oranges being forwarded. Prices for farm products were fairly remunerative, which together with good yields resulted in an average gross crop value of $47.92 per acre. The dairy industry on the project showed a substantial growth during the year, both in number and quality of cows. Bank deposits showed an increase of $99,000.

Operation data, Orland project, by calendar years.

Item.	1918	1919	1920	1921	1922
Acreage for which bureau was prepared to supply water	[1] 20,533	[1] 20,533	[1] 20,533	[2] 20,657	[3] 20,665
Acreage irrigated	14,761	15,203	13,872	14,697	15,119
Miles of canal operated	138	138	138	146	146
Water stored (acre-feet)	46,900	51,000	62,000	13,680	63,460
Water diverted (acre-feet)	45,900	72,000	33,800	68,867	76,632
Water delivered to land (acre-feet)	28,300	45,000	20,600	44,200	50,589
Per acre of land irrigated (acre-feet)	1.91	2.95	1.49	3.01	3.34

[1] Includes 320 acres of vested water rights and 46 acres of town and school sites.
[2] Includes 320 acres of vested water rights and 162 acres of school and town sites.
[3] Includes 320 acres of vested rights and 171 acres of school and town sites.

Settlement data, Orland project.

Item.	1918	1919	1920	1921	1922
Total number of farms on project	725	846	908	936	968
Population	2,000	2,250	2,200	2,250	2,275
Number of irrigated farms	593	602	644	663	693
Operated by owners or managers	549	549	592	589	568
Operated by tenants	44	53	52	74	125
Population	1,589	1,768	1,844	1,892	1,909
Number of towns	1	1	1	1	1
Population	1,600	1,700	1,700	1,700	1,700
Total population	3,600	3,950	3,900	3,950	3,975
Number of public schools	9	10	10	10	10
Number of churches	7	7	7	7	7
Number of banks	2	2	2	2	2
Total capital stock	$141,000	$141,000	$171,000	$171,000	$171,000
Amount of deposits	$950,000	$1,100,000	$1,020,000	$896,000	$995,000
Number of depositors	2,800	3,000	2,900	2,800	2,900

COLORADO, GRAND VALLEY PROJECT.

S. O. HARPER, project manager, Grand Junction, Colo.

The Grand Valley project is located in Mesa County, Colo., on the main line of the Denver & Rio Grande Western Railroad. The principal project towns and estimated population are Grand Junction, 9,000; Fruita, 1,200; and Palisade, 900.

The irrigation plan provides for the diversion of water from the Colorado River, by means of a dam about 8 miles northeast of Palisade, Colo., into a canal system on the north side of the river, for the irrigation of 45,000 acres of land along the north boundary of the Grand Valley. When the project is completed about 35,000 acres will be supplied by gravity and 10,000 acres by electrically-operated pumping plants to be located on the gravity canal. Water service is also furnished through the project system to 8,400 acres of land in the Palisade and Mesa County irrigation districts, and works are now under construction to supply the Orchard Mesa Irrigation District, which includes 10,000 acres of land on the south side of the valley, known as the Orchard Mesa pumping division.

The average elevation of the irrigable area is 4,700 feet, the average annual rainfall is 8.3 inches, and the average range of temperature is from 99° maximum to −7° minimum. The soils consist of red mesa, sandy loam, and adobe. The principal crops are alfalfa, sugar beets, grain, corn, fruit, potatoes, and vegetables.

The project has been completed far enough to supply 30,500 acres in the Gravity division, all lands in the Palisade and Mesa County irrigation districts, and 3,000 acres in the Orchard Mesa Irrigation District. No lands have been opened under public notice, and the project is now operated on a rental basis.

SUMMARY OF DATA FOR GRAND VALLEY PROJECT TO END OF FISCAL YEAR 1923.

Areas and crops:		
Irrigable acreage when project is complete		[1] 55,000
Public land entered to June 30, 1923	13,442	
Public land open to entry on June 30, 1923	403	
Public land withdrawn on June 30, 1923	12,310	
Private land, June 30, 1923	28,845	
Acreage bureau could supply, season of 1922		[2] 30,500
Acreage irrigated, season of 1922		[2] 12,372
Acreage cropped under irrigation, season of 1922		[2] 11,844
Value of irrigated crops, season of 1922		$365,760
Value of irrigated crops per acre cropped		$30.88
Finances:		
Appropriations—		
Fiscal year 1923, amount of congressional authorizations	$497,082.00	
Disbursements and liabilities	404,398.64	
Unencumbered balance, June 30, 1923		$.....
Fiscal year 1924, amount specified in appropriation act		$395,000.00

	Fiscal year 1923.	To June 30, 1923.
Irrigation works:		
Net construction cost	$252,723.37	$4,017,921.98
Less—		
Funds advanced	[3] 156.63	
Water-right contracts: Orchard Mesa Irrigation District	1,000,000.00	1,000,000.00
Total	999,843.37	1,000,000.00
Balance	[3] 747,120.00	3,017,921.98

	Reclamation fund.	Increase of compensation (net).	Total.
Investment to date:			
Disbursements and net transfers	$4,380,492.55	$70,660.89	$4,451,153.44
Less collections	309,103.44	.....	309,103.44
Net investment, June 30, 1923	4,071,389.11	70,660.89	4,142,050.00

[1] Includes 10,000 acres in Orchard Mesa pumping division.
[2] Exclusive of lands in Palisade and Mesa County irrigation districts.
[3] Contra.

Status of current accounts receivable as of June 30, 1923.

	Due.		Collected.			
			Cash.		Other credits to June 30, 1923.	Uncollected June 30, 1923.
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.		
To return net construction cost:						
Funds advanced	[1] $156.63		[1] $156.63			
Revenues:						
Rentals of irrigating water	51,000.98	$219,829.34	44,727.64	$184,502.13	$2,422.58	$32,904.63
Rentals of grazing and farming lands	20.00	229.00	20.00	167.00		62.00
Total	51,020.98	220,058.34	44,747.64	184,669.13	2,422.58	32,966.63
Miscellaneous uncollected						165.00
Other miscellaneous collections (reclamation fund)			7,468.57	124,434.31		
Grand total collections			52,059.58	309,103.44		

[1] Contra.

ACTIVITIES DURING FISCAL YEAR.

Gravity division.—The principal construction work consisted of the digging of drainage ditches required to maintain the productivity of the lands under irrigation and to prevent the increase of seepage. Three dragline excavators were used on this feature during a part of the year, completing 5.57 miles of open drain, involving 117,782 cubic yards of excavation. On the lateral system a few small sublaterals were constructed and minor structures installed as required for making deliveries to new lands. Sixty minor wooden structures were installed in this work.

Orchard Mesa pumping division.—In accordance with the terms of contract with the Orchard Mesa Irrigation District, dated February 18, 1922, work was started on the rehabilitation of the irrigation system of the district. The outstanding bonded and other indebtedness was liquidated and construction work was started in September, 1922. The features completed during the fiscal year were the Colorado River siphon and wasteway (a reinforced concrete pipe 9 feet in diameter laid under the bed of the river), 850 linear feet of concrete flume of 800 second-feet capacity, and the reconstruction of 500 linear feet of the tunnel on canal No. 1. Water was turned through the siphon on May 10, 1923, and the district is now receiving its entire water supply from the project works.

Operation and maintenance.—The project irrigation system was operated without interruption during the season of 1922, although some difficulty was experienced in maintaining uniform deliveries during the fore part of the season on account of tumbleweeds blowing into the laterals on windy days. The irrigated acreage on the Gravity division amounted to 12,400 acres in addition to 8,400 acres in the Palisade and Mesa County irrigation districts.

CROPS AND SETTLEMENT.

The season of 1922 was favorable for the growth of nearly all crops and the yields in general were above the average. With the exception of potatoes, fair prices were received for most of the crops, alfalfa hay and sugar beets in particular giving good returns. The crop prospects for the season of 1923 were excellent and good prices were expected. The general feeling among the project farmers was much more optimistic than it was a year ago.

Operation data, Grand Valley project, by calendar years.

Item.	1918	1919	1920	1921	1922
Acreage for which bureau is prepared to supply water	35,000	[1] 38,400	[1] 38,400	[1] 38,400	[1] 38,400
Acreage irrigated	8,102	[1] 18,449	[1] 19,484	[1] 20,590	[1] 20,672
Miles of canals operated	168	175	175	175	175
Water diverted, acre-feet	74,352	[1] 133,364	[1] 142,527	[1] 145,416	[1] 166,404
Water delivered to land, acre-feet	29,856	[2] 38,307	[2] 36,021	[2] 43,978	[2] 46,290
Per acre of land irrigated	3.69	[2] 3.81	[2] 3.07	[2] 3.57	[2] 3.74

[1] Includes Palisade and Mesa County irrigation districts.
[2] Project lands only.

Settlement data, Grand Valley project.

Item.	1918	1919	1920	1921	1922
Total number of farms on project [1]	900	900	825	825	825
Population	759	884	1,019	1,064	1,134
Number of irrigated farms	317	324	376	402	387
Operated by owners or managers	186	201	251	264	217
Operated by tenants	131	123	125	138	170
Population	759	884	1,019	1,064	1,134
Number of towns [2]	6	6	6	6	6
Population [2]	10,700	11,266	11,415	11,246	11,246
Total population in towns and on farms [2]	11,459	12,150	12,434	12,310	12,380
Number of public schools [2]	20	22	23	23	24
Number of churches [2]	28	28	28	28	28
Number of banks [2]	7	7	7	7	7
Total capital stock [2]	$432,000	$432,000	$465,000	$465,000	$468,700
Total amount of deposits [2]	$3,030,621	$3,743,714	$3,259,780	$3,621,420	$3,520,500
Total number of depositors [2]	8,681	10,042	10,150	10,975	8,825

[1] Estimated.
[2] These items include area adjacent to project.

COLORADO, UNCOMPAHGRE PROJECT.

L. J. Foster, project manager, Montrose, Colo.

The Uncompahgre project is in southwestern Colorado, in Montrose and Delta Counties, on the Denver & Rio Grande Western Railroad. The project towns and population are Montrose, 4,000; Olathe, 750; and Delta, 2,700.

The irrigation plan provides for the diversion of water from the Gunnison River by means of the Gunnison Tunnel, 5.8 miles long, and the South Canal, 11.7 miles long, to supplement the flow of the Uncompahgre River for the irrigation of lands in the Uncompahgre Valley. To distribute the waters of the Uncompahgre and Gunnison Rivers thus combined, the more important private canals taking water from the Uncompahgre River have been purchased, enlarged, and extended by the Government, and in addition high-line lateral and other systems have been constructed on each side of the valley.

The irrigation season extends from April 1 to October 31, 214 days, in all Government canals except the Loutsenhizer, under which the season extends to November 15.

The average elevation of the irrigable area is 5,500 feet above sea level; the average annual precipitation on the project for 21 years, 9.52 inches; and the average range of temperature, 10° to 95° F.

The soils of the irrigable area are red sandy gravel, adobe, and clay loams. The principal products are alfalfa, grain, fruits, sugar beets, potatoes, and other vegetables. The principal markets are Denver, Omaha, and Kansas City, and the West for live stock; Denver, Missouri River points, and Texas for fruit, potatoes, and onions.

The project is completed with the exception of the acquisition of a few private laterals.

SUMMARY OF DATA FOR UNCOMPAHGRE PROJECT TO END OF FISCAL YEAR 1923.

Areas and crops:		
Irrigable acreage when project is complete		97,410
Public land entered to June 30, 1923	19,543	
Public land open to entry on June 30, 1923	1,364	
Public land withdrawn on June 30, 1923	673	
Private land on June 30, 1923	75,830	
Acreage bureau could supply, season of 1922		97,410
Acreage irrigated season of 1922		64,730
Acreage cropped under irrigation, season of 1922		61,691
Value of irrigated crops, season of 1922		$1,550,900
Value of irrigated crops per acre cropped		$25.14
Finances:		
Appropriations—		
Fiscal year 1923, amount of congressional authorizations	$287,888.98	
Disbursements and liabilities	166,833.12	
Unencumbered balance June 30, 1923		$121,055.86
Fiscal year 1924, amount specified in appropriation act		$185,000.00

	Fiscal year 1923.	To June 30, 1923.
Irrigation works—		
Net construction cost	$47,890.96	$6,715,074.41
Less—		
Loss		47,370.81
Water-right contracts, project lands, 97,410 acres		6,713,584.50
Total		6,760,955.31
Balance	47,890.96	[1] 45,880.90
Net operation and maintenance cost [2]	81,724.16	81,724.16

[1] Contra. [2] Project on public notice basis as of Jan. 1, 1923, for operation and maintenance.

Investment to date.	Reclamation fund.	Increase of compensation (net).	Total.
Disbursements and net transfers	$8,040,763.51	$91,795.32	$8,132,558.83
Less collections	1,398,614.72		1,398,614.72
Net investment June 30, 1923	6,642,148.79	91,795.32	6,733,944.11

Status of current accounts receivable as of June 30, 1923.

	Due.		Collected.			
			Cash.		Other credits to June 30, 1923.	Uncollected on June 30, 1923.
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.		
Water right charges	$145,327.50	$146,261.30	$28,165.08	$29,098.88	$14,497.08	$102,665.34
Charges paid in advance			[1] 1,735.99	39.01	59,071.37	
To return net operation and maintenance cost: Charges paid in advance			1,543.60	1,543.60		
Revenues: Rentals of irrigation water	10,531.97	1,182,776.10	53,366.30	1,136,588.52	9,835.62	36,351.96
Rentals of grazing and farming lands	45.00	152.00	45.00	152.00		
Miscellaneous uncollected						186.18
Other miscellaneous collections			9,114.40	231,192.71		
Grand total collections			90,498.39	1,398,614.72		

[1] Contra.

Uncollected construction water-right charges as of June 30, 1923, 70.2 per cent of total accruals.

ACTIVITIES DURING FISCAL YEAR.

Construction work consisted in the extension, enlargement, and installation of minor structures on private laterals taken over by the bureau to be operated as part of the project system.

During the season of 1922 the bureau supplied and distributed water for the irrigation of 64,730 acres of land, of which 5,363 acres were supplied from the south lateral system, 5,382 acres from the west lateral system, 21,184 acres from the Montrose & Delta lateral system, 4,398 acres from the Loutsenhizer lateral system, 6,268 acres from the Selig lateral system, 15,022 acres from the Ironstone lateral system, 5,594 acres from the East lateral system, and 1,519 acres from the Garnet lateral system.

During the season 427,706 acre-feet of water were diverted into the canals operated by the bureau and 422,398 acre-feet were delivered to 1,624 farms.

Miscellaneous work was carried on in the Gunnison Tunnel during the winter of 1922–23 in improving and extending the concrete approaches to the short lined sections. The tunnel was shut off at three different periods during the fiscal year for periods of one day to five days in order to repair breaks and leaks in the lined section of the South canal.

CROPS AND DEVELOPMENT.

Crops in general made a small per acre return for the year, the average for all crops being $25.14. The yields per acre were slightly below the average, with the exception of apples and onions. The apple crop was more than double the average and the onion crop was 7 per cent above the average.

Project activities were going forward with considerable confidence despite the depression which resulted in 1922 from low prices for products and the lack of transportation to ship crops. Reasonable

returns for the 1923 crops will do much to restore confidence in the future of the project.

Better transportation has been promised by railroad officials and, as this is the most vital feature affecting the valley, much promise is held for the future. During the spring of 1923 a cooperative marketing association, embracing probably about 8,000 acres of potatoes, was organized. This movement will tend toward better prices and standardization during the five-year contract.

Operation data, Uncompahgre project, by calendar years.

Item.	1918	1919	1920	1921	1922
Acreage for which bureau was prepared to supply water	100,000	100,000	100,000	[1] 97,410	97,410
Acreage irrigated	58,270	60,906	64,180	63,760	64,730
Miles of canal operated	413	442	448	452	467
Water diverted (acre-feet)	423,050	420,176	429,820	446,225	427,706
Water delivered to land (acre-feet)	367,144	390,770	365,853	415,599	422,398
Per acre of land irrigated (acre-feet)	6.30	6.42	5.70	6.52	6.52

[1] Decrease due to reclassification.

Settlement data, Uncompahgre project.

Item.	1918	1919	1920	1921	1922
Total number of farms on project	1,514	1,526	1,588	1,639	1,624
Population	5,279	5,471	6,015	6,166	6,149
Number of irrigated farms	1,514	1,526	1,588	1,639	1,624
Operated by owners or managers	949	1,012	1,077	941	944
Operated by tenants	565	514	511	698	680
Population	5,279	5,471	6,015	6,166	6,149
Number of towns	3	3	3	3	3
Population	6,950	6,950	7,450	7,450	7,450
Total population in towns and farms	12,229	12,421	13,465	13,616	13,599
Number of public schools	26	27	27	27	27
Number of churches	27	27	27	27	27
Number of banks	8	8	8	8	7
Total capital stock	$588,800	$594,025	$621,763	$618,250	$550,100
Amount of deposits	$4,484,626	$5,550,465	$4,925,150	$3,219,773	$2,930,700
Number of depositors	10,000	11,000	11,000	11,000	11,250

IDAHO, BOISE PROJECT.

J. B. Bond, project manager, Boise, Idaho.

The Boise project is located in the counties of Ada, Boise, Canyon, and Elmore, Idaho, and Malheur, Oreg. It is served by the Oregon Short Line Railroad and branch lines, also the Idaho Traction and Caldwell Traction Co. electric lines. The length of the irrigation season is 184 days from April 5. The average elevation of the irrigable area is 2,500 feet above sea level. The rainfall at Boise for 58 years averaged 13.64 inches. The greater part of this precipitation occurs outside of the growing season. The average highest recorded temperature for 23 years is 102° F., and the average lowest temperature for the same period is 2° F. The character of the soil is clayey loam, light sandy loam, and sandy loam. The principal products are alfalfa, wheat, oats, clover, potatoes, apples, prunes, and head lettuce. The principal markets are Boise, Nampa, Caldwell, and Meridian, Idaho; Portland, Oreg.; and eastern cities. The limiting area of farm units on public land is 80 acres and on private land 160 acres.

The irrigation plan provides for storage of water in the Arrowrock Reservoir on Boise River, about 22 miles above Boise, and in the Deer Flat Reservoir near Caldwell and Nampa, Idaho; the diversion of water from Boise River by the Boise River Dam, about 8 miles above Boise; the distribution of water on the south side of Boise River, through the Main canal, leading from the dam to the Deer Flat Reservoir; distributing laterals heading in the Main canal; distributing canals heading in the Deer Flat Reservoir; and distributing canal systems heading in the Boise River below the Boise River Dam; and the distribution of water on the north side of the Boise River to a small area of land east of Boise through a canal system heading in the Boise River Dam. Water is diverted from two large drains in the Pioneer Irrigation District and carried through a gravity canal across the Boise River near Caldwell to supply 6,500 acres in the Notus division.

SUMMARY OF DATA FOR BOISE PROJECT TO END OF FISCAL YEAR 1923.

Areas and crops:		
Irrigable acreage when project is complete		353,941
Public land entered to June 30, 1923	67,468	
Public land withdrawn on June 30, 1923	5,560	
State land unsold on June 30, 1923	5,980	
Private land, June 30, 1923	274,933	
Acreage bureau could supply, season of 1922		283,411
Acreage irrigated, season of 1922 (crop census)		112,000
Acreage cropped, season of 1922 (crop census)		108,500
Value of irrigated crops, season of 1922		$3,992,600
Value of irrigated crops per acre cropped		$36.80
Finances:		
Appropriations—		
Fiscal year 1923, amount of Congressional authorizations	$1,418,163.05	
Disbursements and liabilities	1,155,453.81	
Unencumbered balance June 30, 1923		$262,709.24
Fiscal year 1924, amount specified in appropriation act		$1,390,000.00

	Fiscal year, 1923.	To June 30, 1923.
Irrigation works—		
Net construction cost	$305,628.76	$12,731,409.73
Less water-right contracts—		
Project lands (96,549 acres)	42,617.35	7,492,859.86
Warren Act lands (approximately 177,618 acres)	279,228.71	5,155,576.70
Total	321,846.06	12,648,436.56
Balance	[1] 16,217.30	82,973.17

[1] Contra.

Summary of data for Boise project to end of fiscal year 1923—Continued.

	Calendar year, 1922.	To Dec. 31, 1922.	Fiscal year, 1923.	To June 30, 1923.
Net operation and maintenance cost	$227,468.45	$1,407,933.13	$223,548.24	$1,530,627.13
Less:				
Charges billed or contracted	295,388.23	1,497,369.38	279,583.71	1,499,239.50
Penalties	7,257.47	15,200.18	9,680.85	21,276.99
Discounts	[1] 8,658.58	[1] 38,154.15	[1] 4,807.28	[1] 41,525.01
Total	293,987.12	1,474,415.41	284,457.28	1,478,991.48
Balance	[1] 66,518.67	[1] 66,482.28	[1] 60,909.04	51,635.65
Net operation and maintenance drainage cost	38,218.12	72,113.24	36,913.77	101,260.22
Less:				
Charges billed or contracted	179,167.76	272,595.77	141,873.29	342,078.62
Penalties	1,442.54	1,602.76	9,067.09	9,875.97
Discounts	[1] 1,081.35	[1] 2,493.78	[1] 1,118.09	[1] 3,169.14
Total	179,528.95	271,704.75	149,822.29	348,785.45
Balance	[1] 141,310.83	[1] 199,591.51	[1] 112,908.52	[1] 247,525.23

Investment to date.	Reclamation fund.	Judgment Court of Claims.	Increase of compensation (net).	Total.
Disbursements and net transfers	$15,758,890.89	$50,228.93	$176,318.60	$15,985,438.42
Less collections	4,237,131.85			4,237,131.85
Net investment June 30, 1923	11,521,759.04	50,228.93	176,318.60	11,748,306.57

[1] Contra.

Status of current accounts receivable as of June 30, 1923.

	Due.		Collected.			Uncollected June 30, 1923.
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.	Other credits to June 30, 1923.	
To return net construction cost:						
Water-right charges	$430,244.95	$1,737,824.13	$287,431.48	$1,374,177.52	$25,092.00	$338,554.61
Charges paid in advance			[1] 332.52	9,044.56		
To return net regular operation and maintenance cost:						
Project lands (96,549 acres)	187,678.87	965,906.79	143,663.76	737,401.28	24,592.58	203,912.93
Warren act lands (approximately 177,818 acres)	91,904.84	533,332.71	78,506.65	469,360.01	16,932.43	47,040.27
Total	279,583.71	1,499,239.50	222,170.41	1,206,761.29	41,525.01	250,953.20
Penalties and interest			9,680.85	21,276.99		
To return net operation and maintenance cost (drainage):						
Drainage charges, project lands	141,873.29	342,078.62	119,334.36	186,336.87	3,169.14	152,572.61
Charges paid in advance			[1] 17.12	.02		
Penalties and interest			9,067.09	9,875.97		
Revenues:						
Rentals of irrigating water	18,767.97	740,015.18	16,756.50	722,167.21	4,720.50	13,127.47
Rentals of power and light	10,952.20	117,279.80		96,424.61	20,855.19	
Rentals of grazing and farming lands	[1] 255.55	20,147.79	[1] 233.62	20,059.09		88.70
Total	29,464.62	877,442.77	16,522.88	838,650.91	25,575.69	13,216.17
Miscellaneous uncollected						3,182.92
Other miscellaneous collections (reclamation fund)			22,751.17	591,007.72		
Grand total collections			686,608.60	4,237,131.85		

[1] Contra.

Uncollected construction water-right charges as of June 30, 1923, 19.5 per cent of total accruals.
Uncollected regular operation and maintenance charges as of June 30, 1923, 16.7 per cent of total accruals.
Uncollected operation and maintenance (drainage) charges as of June 30, 1923, 44.6 per cent of total accruals.

ACTIVITIES DURING FISCAL YEAR.

On the Main South Side Canal, Arrowrock division, concrete side-lining amounting to 917 feet was placed to protect a filled section of the canal. At the head of the Robinson Hill pipe line 1,700 feet of wood-stave pipe were replaced with reinforced concrete pipe of 30-inch diameter. The Hubbard-Beal surface drain having a length of 4,900 linear feet, and involving 3,444 cubic yards of excavation, was constructed by contract. The Government drainage organization continued to operate from Wilder. About 5¼ miles of deep drains were completed, involving 213,600 cubic yards of class 1 excavation and the placing of 154 cubic yards of concrete and 23,430 feet b. m. of lumber.

During 1922, 527,156 acre-feet of water were delivered to 3,260 farms, containing an irrigated area of 155,000 acres. The average amount of water used was 3.46 acre-feet at an average cost of $1.58 per acre irrigated, for operation and maintenance. The cost for operation and maintenance per acre irrigable amounted to $1.46.

Deer Flat Reservoir was filled on April 22. Water went over the spillway of Arrowrock Reservoir on May 24. On July 4 the first stored water was used from Arrowrock Reservoir on project lands.

Maintenance.—The removal of silt from canals and laterals cost 12 per cent of the total expenditure for operation and maintenance. Work was done by teams and one Ruth ditch cleaner. About 18,000 cubic yards of sand and gravel were removed from the Main Canal near the diversion dam. This material washed in during high water and had decreased the canal flow. No serious and very few minor breaks occurred during the year. Small structures replaced number 413, and 91 new structures were installed. In general the canal and lateral system is in good condition.

CROPS AND DEVELOPMENT.

Crop conditions were generally good and yields were excellent, with the exception of grain which was affected adversely by a short period of hot weather. There was a general increase in the number of live stock kept on the farms, and also an increase in the number of range cattle and sheep fed on the project during the winter. Dairy herds continued to grow and improve in grade.

Operation data, Boise project, Idaho, by calendar years.

Item.	1917	1918	1919	1920	1921	1922
Acreage to which bureau was prepared to furnish water	[1] 223,866	[1] 274,339	[1] 274,125	[1] 274,379	[1] 282,831	[1] 283,411
Acreage irrigated	[2] 95,524	[2] 110,000	[2] 125,000	[2] 131,760	[2] 153,000	[2,3] 155,000
Miles of canal operated	982	988	989	1,000	1,016	1,056
Water diverted (acre-feet)	618,272	824,462	759,084	853,810	844,195	748,570
Water delivered to land per acre of land irrigated (acre-feet)	3.07	3.75	3.34	3.00	3.67	3.46

[1] Including partial service to vested water-rights land.
[2] Acreage served with full water supply.
[3] 112,000 covered by crop census.

Settlement data, Boise project.

Item	1918	1919	1920	1921	1922
Total number of farms on project	3,992	3,992	4,000	4,085	[1] 4,998
Population	13,200	15,000	16,000	16,340	14,700
Number of irrigated farms	3,060	3,207	3,260	3,300	3,559
Operated by owners or managers	2,090	2,545	2,417	2,440	2,896
Operated by tenants	970	662	843	860	663
Population	9,170	10,000	11,176	11,550	14,236
Number of towns	10	10	10	8	8
Population	36,000	40,000	36,400	36,170	36,170
Total population in towns and on farms	49,200	55,000	52,400	52,510	50,870
Number of public schools	24	24	24	28	28
Number of churches	52	54	56	56	56
Number of banks	15	15	17	16	16
Total capital stock	$1,800,000	$2,000,000	$1,850,000	$2,741,000	$2,741,000
Amount of deposits	$11,500,000	$13,500,000	$20,600,000	$16,326,000	$16,707,000
Number of depositors	[2] 25,000	[2] 28,000	[2] 32,000	[2] 30,000	[2] 30,000

[1] All vested water-right lands excluded with the exception of 21,50 0 acres of the New York Canal Co.
[2] Estimated: Some banks refuse to give number of depositors.

IDAHO, KING HILL PROJECT.

A. M. RAWN, project manager, King Hill, Idaho.

The King Hill project is located in the counties of Elmore, Gooding, Twin Falls, and Owyhee and in townships 5 and 6 south, ranges 8 to 13 east, Boise meridian. The estimated population of the four project towns is as follows: Glenns Ferry, 1,597; Bliss, 180; King Hill, 200; Hammett, 75. The main line of the Oregon Short Line runs the entire length of the project. The water supply is obtained from the Malad River, which is fed by numerous large springs. The annual run-off is approximately 1,000,000 acre feet. The water for the project is diverted from the Malad River at a point about a mile above its confluence with the Snake River, 300 second-feet of water being delivered to the canal system of the project by the Idaho Power Co. by means of a timber flume 4,000 feet long. The main canal is 50 miles long and crosses the Snake River twice by means of wood-stave pipe siphons on steel bridges. About half of the irrigable area lies on each side of the Snake River. There are 16,249 acres supplied by gravity and 574 acres supplied by pumps. The average elevation above sea level is 2,750 feet. During the past 10 years the average annual rainfall was 9.2 inches, the average maximum temperature was 107°, and the average minimum temperature was 4° F. The soil on the project ranges from light to heavy sandy loam with some heavy clay. With an irrigation season of 193 days the project produces principally alfalfa, early vegetables, grain, and stock. These find a ready market at Portland, Boise, and small towns in southern Idaho. The project was reconstructed under contract with the King Hill Irrigation District. Work was begun in February, 1918, and on June 30, 1923, all work contemplated under the contract was completed.

SUMMARY OF DATA FOR KING HILL PROJECT TO END OF FISCAL YEAR 1923.

Areas and crops:		
Irrigable acreage when project is complete		16,823
Public land entered to June 30, 1923	516	
Public land open to entry on June 30, 1923	71	
Public land withdrawn on June 30, 1923	6	
State land unsold on June 30, 1923	400	
Other private land June 30, 1923	15,830	
Acreage bureau could supply, season of 1922		13,648
Acreage irrigated, season of 1922		6,440
Acreage cropped under irrigation, season of 1922		6,050
Value of irrigated crops, season of 1922		$219,900
Value of irrigated crops per acre cropped		$36.20
Finances:		
Appropriations—		
Fiscal year 1923, amount of congressional authorizations	$516,769.53	
Disbursements and liabilities	391,411.42	
Unencumbered balance June 30, 1923		$125,358.11
Fiscal year 1924, amount specified in appropriation act		$75,000.00

	Fiscal year 1923.	To June 30, 1923.
Irrigation works:		
Net construction cost	$409,766.99	$1,881,391.45
Water-right contracts, project lands (16,822 acres)		2,000,000.00
Balance	409,766.99	[1] 118,608.55

[1] Contra.

Status of current accounts receivable as of June 30, 1923.

	Due.		Cash collected.		Uncollected June 30, 1923.
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.	
To return net construction cost, water-right charges	$50,644.77	$127,416.97			$127,416.97
Revenues, rentals of irrigating water	28,726.24	52,230.73	$25,978.80	$49,369.37	2,861.36
Miscellaneous uncollected					1,999.40
Other miscellaneous collections			9,758.91	54,128.89	
Grand total collections			35,737.71	103,498.26	

Investment to date.	Reclamation fund.	Increase of compensation (net).	Total.
Disbursements and net transfers	$1,887,830.74	$100,693.15	$1,988,523.89
Less collections	103,498.26		103,498.26
Net investment June 30, 1923	1,784,332.48	100,693.15	1,885,025.63

Uncollected construction water-right charges as of June 30, 1923, 100 per cent of total accruals.
Uncollected operation and maintenance charges as of June 30, 1923 (water rentals), 5.5 per cent of total accruals.

ACTIVITIES DURING FISCAL YEAR.

Construction consisted of a general repair, betterment, and replacement of canals and structures over the entire project. The results, in the main, are as follows: The entire main canal, 50 miles in length, excepting structures built by the Bureau of Reclamation and 26 miles of laterals, were reconstructed and enlarged. Fourteen miles of new laterals were built. Earthwork involved a total excavation of 62,000 cubic yards of earth and 4,100 cubic yards of rock. Six wood-stave siphons with an average diameter of 50 inches and having a total length of 19,588 feet, were repaired, rebuilt in part, and enlarged by adding additional staves. Concrete inlet and outlet structures of efficient and modern design were built for these wood-stave siphons. Various stretches of the main canal and important laterals were lined with reinforced concrete, a total of 28,000 cubic yards of lining having been placed. Two pumping plants with an average capacity of 10 second-feet were rebuilt. Drops in the canal were utilized to run the pumps which are turbine driven. Six semicircular steel flumes, with diameters of 2 to 7 feet, were built, the combined length of which is 2,345 feet. A total of 18,986 feet of lock joint concrete pipe was manufactured and installed. Heads vary up to 139 feet in the pipes. The following minor structures were built: Ten concrete chutes, total length 4,586 feet; 2 rubble masonry chutes, total length 2,800 feet; 5 concrete drops; 12 masonry drops; 176 timber turnouts; 25 timber checks; 31 timber drops; 142 timber weirs; and 4,835 feet of machine banded 12 to 26 inch wood-stave pipe siphons.

Seepage and evaporation.—At the time the Government took over the reconstruction of the project there had been constructed one open drain about 0.3 mile long to take care of surface water in Pasadena Valley. This drain had been enlarged and extended to a total length of 0.8 mile to provide an outlet for surface water from about 600 acres.

Operation and maintenance.—The irrigation system was operated by the forces of the Bureau of Reclamation under contract with the King Hill Irrigation District dated January 11, 1922. From July 1 to September 15, 1922, water delivery was maintained with only minor interruptions resulting from small breaks in the main canal and laterals. On September 15 water was turned out of the system to permit winter construction operations and cleaning. Water service was resumed on the main canal extension on March 20, 1923, and in the entire system on April 5, 1923.

Operation data, King Hill project, by calendar years.

Item.	1920	1921	1922
Acreage for which bureau was prepared to supply water	11,340	13,648	13,648
Acreage irrigated	4,780	5,900	6,440
Miles of canal operated	83.2	83.2	91.3
Water diverted (acre-feet)	43,660	56,153	61,326
Water delivered to land (acre-feet)	22,420	30,028	35,875
Per acre of land irrigated (acre-feet)	4.69	5.08	5.57

Settlement data, King Hill project.

Item.	1917	1918	1919	1920	1921	1922
Total number of farms on project	225	225	225	225	260	260
Population	350	350	350	424	557	599
Total irrigated farms	125	125	125	125	160	175
Operated by owners or managers	110	110	110	110	141	131
Operated by tenants	15	15	15	15	19	44
Number of towns	3	3	3	4	4	4
Population	1,350	1,425	1,500	1,572	1,685	2,052
Total population of towns and farms	1,700	1,775	1,850	1,996	2,242	2,651
Number of public schools	4	4	4	5	6	6
Number of churches	4	4	5	5	5	5
Number of banks	1	1	1	2	2	1
Total capital stock	$20,000	$20,000	$20,000	$30,000	$30,000	$20,000
Amount of deposits	.....	$183,436	$245,545	$418,548	$319,036	$275,000
Number of depositors	.....	758	738	1,060	824	800

IDAHO, MINIDOKA PROJECT.

BARRY DIBBLE, Project Manager, Burley, Idaho.

The Minidoka project is located in Minidoka and Cassia Counties, Idaho; Jackson Lake Reservoir is in Lincoln County, Wyo. The Oregon Short Line is the only railroad on the project. Project towns and estimated population are: Burley, 5,000; Rupert, 2,500; Paul, 350; Declo, 150; Heyburn, 135; Acequia, 35. The source of water supply is Snake River, supplemented by storage. The irrigation season is from April 1 to October 15 (198 days); average rainfall for the past 18 years 12 inches; average of maximum and minimum temperatures for the past 18 years 99.2° and −13.6°. The principal products are alfalfa, wheat, oats, clover seed, sugar beets, and potatoes.

The project is watered by two canal systems, one on either side of Snake River. Power developed at the diversion dam is used in pumping water from the canals for irrigating high lands, and is also used for municipal and domestic purposes. Storage for the project is provided by a reservoir at Jackson Lake, Wyo., with a total capacity of 847,000 acre-feet, and by Lake Walcott, at the upper end of the project, with an available capacity of 100,000 acre-feet.

SUMMARY OF DATA FOR MINIDOKA PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:		
Irrigable acreage when project is complete		236,562
Public land entered to June 30, 1923	96,258	
Public land open to entry on June 30, 1923	449	
Public land withdrawn on June 30, 1923	106,840	
State land unsold on June 30, 1923	8,467	
Private land, June 30, 1923	24,548	
Acreage bureau could supply, season of 1922		121,562
Acreage irrrigated, season of 1922		105,580
Acreage cropped under irrigation, 1922		99,805
Value of irrigated crops, season of 1922		$3,019,350
Value of irrigated crops, per acre cropped		$30.25
Finances:		
Appropriations—		
Fiscal year 1923, amount of congressional authorizations	$1,767,092.76	
Disbursements and liabilities	1,488,044.34	
Unencumbered balance June 30, 1923		$279,048.42
Fiscal year 1924, amount specified in appropriation act		665,000.00

	Fiscal year 1923.	To June 30 1923.
Irrigation works:		
Net construction cost	$1,220,737.25	$8,066,977.12
Less—		
Funds advanced and unapplied credits	[1] 4,260.00	828,267.96
Water-right contracts:		
Project lands, 120,949 acres	[1] 36,925.87	5,609,651.53
Warren Act lands approximately 626,840 acres		429,412.50
Other lands	236,250.00	243,750.00
Total	195,064.13	7,111,081.99
Balance	1,025,673.12	955,895.13

	Calendar year 1922.	To December 31, 1922.		
Net operation and maintenance cost	$112,132.99	$1,318,703.33	118,991.91	1,369,602.32
Less—				
Charges billed or contracted	126,462.58	1,364,607.32	134,710.72	1,399,053.50
Penalties	8,855.04	18,737.57	5,386.10	22,289.01
Discounts	[1] 1,413.60	[1] 16,580.56	[1] 1,067.62	[1] 17,444.40
Total	133,904.02	1,366,764.33	139,029.20	1,403,898.11
Balance	[1] 21,771.03	[1] 48,061.00	[1] 20,037.29	[1] 34,295.79

[1] Contra.

Summary of data for Minidoka project to end of fiscal year 1922—Continued.

Investment.	Reclamation fund.	Judgments Court of Claims.	Increase of compensation (net).	Total.
Disbursements and net transfers	$9,779,317.74	$15,550.90	$105,822.49	$9,900,691.13
Less collections	5,124,961.81			5,124,961.81
Net investment June 30, 1923	4,654,355.93	15,550.90	105,822.49	4,775,729.32

Status of current accounts receivable as of June 30, 1923.

	Due.		Collected.			Uncollected June 30, 1923.
			Cash.		Other credits to June 30, 1923.	
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.		
To return net construction cost:						
Funds advanced and unapplied credits	[1] $4,260.00	$828,267.96	[1] $4,260.00	$828,267.96		
Water-right charges	395,640.67	2,133,694.62	273,017.73	1,671,608.15	$154,289.87	$307,796.60
Total	391,380.67	2,961,962.58	268,757.73	2,499,876.11	154,289.87	307,796.60
Charges paid in advance			210,162.51	212,042.26		
To return net operation and maintenance cost:						
Operation and maintenance charges—						
Project lands (120,949 acres)	121,166.22	1,252,915.87	91,606.41	1,008,146.80	67,958.01	176,811.06
Warren Act lands (approximately 636,840 acres)	23,422.31	106,626.41	23,417.66	106,444.50		181.91
Total	144,588.53	1,359,542.28	115,024.07	1,114,591.30	67,958.01	176,992.97
Charges paid in advance			11,016.32	11,024.14		
Penalties and interest			5,335.78	22,238.69	50.32	
Revenues:						
Rentals of irrigating water	2,916.32	270,803.36	2,648.72	267,301.53	3,234.23	267.60
Rentals of power and light	111,246.46	691,771.30	111,805.70	663,772.58	4,812.08	23,186.64
Rentals of grazing and farming lands	[1] 322.82	33,622.87	662.24	29,367.51		4,255.36
Total	113,839.96	996,197.53	115,116.66	960,441.62	8,046.31	27,709.60
Miscellaneous uncollected						402.96
Other miscellaneous collections (reclamation fund)			58,817.80	304,747.69		
Grand total collections			784,230.87	5,124,961.81		

[1] Contra.

Uncollected construction water right charges as of June 30, 1923, 10.39 per cent of total accruals.
Uncollected operation and maintenance charges as of June 30, 1923, 13.02 per cent of total accruals.

ACTIVITIES DURING FISCAL YEAR.

American Falls reservoir.—By a vote of 7,360 to 1,249 on January 16, the American Falls Reservoir District embracing 394,500 acres was formed to secure 300,000 acre-feet of storage in the American Falls Reservoir. Lands in three projects above American Falls and two below are included in this district. On May 12 the contract between the United States and this district and a bond issue of $2,700,000 were authorized. This contract together with a similar

one with the Empire Irrigation District for 110,000 acre-feet was executed on June 15. The total storage subscriptions, including 520,000 acre-feet for the proposed Minidoka North Side pumping division, now amount to 995,000 acre-feet for 620,000 acres of land.

On June 15 a contract was entered into with the Idaho Power Company by which a portion of their rights was obtained for the benefit of the reservoir and the proposed Minidoka North Side pumping division.

Contracts were entered into during the last two weeks in June for real estate to the value of $578,000 for right of way purposes.

Plans were made for the improvement of the new town site of American Falls.

Commercial power.—The contract with the Melcher Mining & Milling Co. for furnishing electric power was completed. The power line extending from Albion, Idaho, to the company's mines, about 9 miles in length, was removed and most of the substation equipment at the mine was transferred to the Black Canyon Dam on the Boise project. A contract for the delivery of part of the power generated by the Boise River powerhouse on the Boise project over the line of the Idaho Power Co. to Milner, Idaho, was renewed on April 1, 1923.

Financial conditions on the project showed a marked improvement during the year. Crop yields for 1922 were excellent and, except for potatoes, prices were good. The outlook for 1923 was excellent. The feeling generally among the farmers was one of optimism for the future.

Operation data, Minidoka project, by calendar years.

Item.	1917	1918	1919	1920	1921	1922
Acreage for which bureau was prepared to supply water	120,852	121,000	121,392	121,557	121,557	121,562
Acreage irrigated	99,020	105,062	104,259	107,650	107,230	105,580
Miles of canal operated	633.19	634.37	634.60	634.60	634.60	634.60
Water diverted (acre-feet)	616,228	745,821	626,645	734,428	703,929	712,975
Water delivered to land (acre-feet)	305,278	390,903	349,012	383,766	[2] 99,363	[2] 107,573
Per acre of land irrigated (acre-feet) [1]	3.1	3.7	3.3	3.6	[2] 2.13	[2] 2.38

[1] Partially estimated.
[2] South Side pumping division; data from Gravity division not available.

Settlement data, Minidoka project.

Item.	1917	1918	1919	1920	1921	1922
Total number of farms on project	2,327	2,340	2,353	2,420	2,454	2,451
Population	7,467	8,490	9,029	9,177	8,848	8,301
Number of irrigated farms	2,195	2,208	2,353	2,420	2,454	2,451
Operated by owners or managers	1,725	1,556	1,877	1,863	1,987	1,868
Operated by tenants	470	652	476	557	467	583
Population	7,467	8,490	9,029	9,250	8,848	8,301
Number of towns	6	6	6	6	6	6
Population	5,300	6,600	8,500	9,000	8,445	8,170
Total population towns and farms	12,767	15,090	17,529	18,250	17,293	16,471
Number of public schools	20	21	28	26	22	22
Number of churches	25	25	25	29	29	29
Number of banks	6	8	8	10	[1] 6	[1] 5
Total capital stock	$165,000	$240,000	$260,000	$345,000	[1] $190,000	[1] $180,000
Amount of deposits	$2,522,764	$2,543,343	$3,725,691	$3,860,744	[1] $1,140,000	[1] $1,100,000
Number of depositors	7,350	10,663	11,086	12,725	[1] 5,900	[1] 5,000

[1] Exclusive of banks that failed.

MONTANA, HUNTLEY PROJECT.

A. R. McGINNESS, project manager, Ballantine, Mont.

The Huntley project is located in the south central part of Montana, Yellowstone County, and is tributary to the Northern Pacific and the Chicago, Burlington & Quincy Railroads. There are five principal towns on the project—Huntley, Worden, Ballantine, Pompeys Pillar, and Nibbe—which provide excellent commercial facilities to all parts thereof. The entire project is practically completed, and water may be delivered to all lands from the present system. The irrigation plan provides for the diversion of water from the Yellowstone River at a point 2 miles west of Huntley and for a gravity supply to all project lands except 5,400 acres under the high-line canal and its extensions, which are served by two pumping plants located 1¼ miles east of Ballantine. These pumping plants elevate a maximum of 106 second-feet up a 45-foot lift into the high-line canal. The water supply for the project is ample and is derived direct from the Yellowstone River without diversion dam or storage works.

The soils consist of heavy clays and light sandy loams, lying at an average elevation of about 3,000 feet above sea level. Climatic conditions are favorable to the production of staple crops. The average annual rainfall is 12 to 13 inches.

SUMMARY OF DATA FOR HUNTLEY PROJECT TO END OF FISCAL YEAR 1923.

Areas and crops:		
Irrigable acreage when project is complete		32,473
Public land entered to June 30, 1923	26,176	
Public land withdrawn on June 30, 1923	2,570	
Private land, June 30, 1923	3,727	
Acreage bureau could supply, season of 1922		32,000
Acreage irrigated, season of 1922		19,523
Acreage cropped under irrigation, season of 1922		19,523
Value of irrigated crops, season of 1922		$572,700.00
Value of irrigated crops per acre cropped		$29.33
Finances:		
Appropriations—Fiscal year 1923, amount of congressional authorizations	$180,904.41	
Disbursements and liabilities	41,765.40	
Unencumbered balance June 30, 1923		$139,139.01
Fiscal year 1924, amount specified in appropriation act		135,000.00

	Fiscal year 1923.	To June 30, 1923.
Irrigation works—		
Net construction cost	$7,938.32	$1,475,623.45
Less—		
Funds advanced and unapplied credits		717.64
Water-right contracts, project lands (28,033 acres)	[1] 3,664.19	1,320,616.25
Total	[1] 3,664.19	1,321,333.89
Balance	11,602.51	154,289.56

	Calendar year 1922.	To Dec. 31, 1922.	Fiscal year 1923.	To June 30, 1923.
Net operation and maintenance cost	$39,730.89	$829,707.53	$39,003.14	$849,287.82
Less:				
Charges billed or contracted	45,426.71	424,298.59	45,902.54	424,162.62
Penalties	1,327.97	5,116.54	2,716.83	6,815.26
Discounts	[1] 1,082.89	[1] 6,590.35	[1] 644.19	[1] 6,903.52
Total	45,671.79	422,824.78	47,975.18	424,074.36
Balance	[1] 5,940.90	406,882.75	[1] 8,972.04	425,213.46

Investment.	Reclamation fund.	Increase of compensation (net).	Total.
Disbursements and net transfers	$2,391,146.30	$29,733.74	$2,420,880.04
Less collections	762,871.23		762,871.23
Net investment June 30, 1923	1,628,275.07	29,733.74	1,658,008.81

[1] Contra.

Status of current accounts receivable as of June 30, 1923.

	Due.		Collected.			
			Cash.		Other credits to June 30, 1923.	Uncollected June 30, 1923.
	Fiscal year. 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.		
To return net construction cost:						
Funds advanced and unapplied credits		$717.64		$717.64		
Water-right charges	$25,526.60	391,927.39	14,537.91	359,127.72	$502.21	$32,297.46
Total	25,526.60	392,645.03	$14,537.91	359,845.36	$502.21	32,297.46
Charges paid in advance			[1] 778.52	708.66		
To return net operation and maintenance cost:						
Operation and maintenance charges, project lands (28033 acres)	45,902.54	424,162.62	31,960.04	313,915.45	7,517.39	102,729.78
Charges paid in advance			418.87	461.71		
Penalties and interest			2,663.35	6,678.76	136.50	
Revenues:						
Rentals of irrigating water	1,181.09	6,340.36	1,061.35	6,132.44		207.92
Rentals of grazing and farming lands	832.78	12,195.66	1,261.53	11,659.99		535.67
Total	2,013.87	18,536.02	2,322.88	17,792.43		743.59
Miscellaneous uncollected						212.32
Other miscellaneous collections (Reclamation fund)			3,976.12	63,468.86		
Grand total collections			55,100.65	762,871.23		

[1] Contra.

Uncollected construction water-right charges as of June 30, 1923, 8.22 per cent of total accruals.
Uncollected operation and maintenance charges as of June 30, 1923, 24.2 per cent of total accruals.

CROPS AND DEVELOPMENT.

Agricultural crops and general conditions were better on June 30, 1923, than they have been for a number of years. A larger area was in crop than in 1922, and the outlook for the future was extremely favorable.

The cost of operation and maintenance work was gradually receding from the high mark of 1920 and 1921 and a pre-war charge will be possible by 1924. The canal and lateral systems were in fine condition and nearly all wooden structures had been replaced with concrete. Excavating machines had recently cleaned practically the entire lateral system; thus only a nominal amount of work will be required for the 1924 irrigation season.

The drainage system was operating successfully and was requiring little expense for maintenance work except in replacement of trap boxes. More drainage is needed, as nearly 1,300 acres are still water-logged and nonproductive. A number of waste water ditches were also in bad condition and needed cleaning.

Operation data, Huntley project, by calendar years.

Item.	1917	1918	1919	1920	1921	1922
Acreage for which bureau was prepared to deliver water	32,271	31,360	31,265	32,085	31,964	32,000
Acres irrigated	19,122	19,262	19,310	20,020	18,800	19,523
Miles of canal operated	229	229	229	229	229	229
Water diverted (acre-feet)	64,344	47,982	92,638	79,079	79,186	72,245
Water delivered to land (acre-feet)	21,274	20,182	31,785	24,250	26,814	18,768
Per acre of land irrigated (acre-feet)	1.11	1.06	1.64	1.21	1.42	0.96

Settlement data, Huntley project.

Item.	1917	1918	1919	1920	1921	1922
Total number of farms on the project	691	691	691	691	691	690
Number of irrigated farms	553	561	549	603	578	590
Operated by owners or managers	368	359	315	320	377	387
Operated by tenants	185	202	234	283	201	203
Population	1,880	2,107	2,000	1,883	1,861	1,682
Number of towns	8	8	8	8	8	8
Population	610	599	599	664	673	673
Total population in towns and on farms	2,490	2,706	2,599	2,547	2,534	2,355
Number of public schools	8	8	8	8	8	8
Number of churches	6	6	6	6	7	7
Number of banks	4	4	4	4	4	2
Total capital stock	$85,000	$85,000	$85,000	$95,000	$95,000	$50,000
Amount of deposits	$498,000	$540,434	$560,000	$588,362	$402,282	$156,000
Number of depositors	1,375	1,400	1,400	1,711	1,475	810

MONTANA, MILK RIVER PROJECT.

GEORGE E. STRATTON, project manager, Malta, Mont.
R. M. SNELL, project manager, St. Mary storage, Browning, Mont.

The Milk River project is located on the Great Northern Railway in northeastern Montana, about 50 miles south of the Canadian boundary, and extending from the mouth of the Milk River (which is about 120 miles west of the North Dakota line) westward for about 150 miles to and beyond Chinook. The average elevation is about 2,200 feet; the soil grades from loam through finer textured loam or clay to a soil known locally as gumbo. The average annual rainfall is about 13.24 inches; the ordinary maximum summer and minimum winter temperatures are about 100° and −40° F., respectively.

The irrigation plan provides for the storage of water in the Sherburne Lakes and its diversion through a canal 28.9 miles long, heading three-fourths of a mile below the lower St. Mary Lake and discharging into the North Fork of Milk River, thence flowing through Canada for 216 miles and returning to the United States for the irrigation of lands on the Milk River from above Chinook to and below Glasgow; the storage of water in Nelson reservoir located about 20 miles northeast of Malta; a storage reservoir known as the Chain Lakes Reservoir, between Havre and the Canadian boundary; the diversion of water from the Milk River by three dams near Chinook and Harlem into canals on each side of the river comprising the Chinook division; the diversion of water from the Milk River by a dam near Dodson into two canals, the Dodson North Canal irrigating lands near Dodson and Malta, and the Dodson South Canal conveying water to Nelson Reservoir and irrigating lands near Wagner, Malta, Bowdoin, Saco, and Hinsdale, comprising the Malta division; and the diversion of water from the Milk River by a dam near Vandalia into a canal on the south side of the river for the irrigation of lands near Tampico, Glasgow, and Nashua, comprising the Glasgow division.

SUMMARY OF DATA FOR MILK RIVER PROJECT TO END OF FISCAL YEAR 1923.

Areas and crops:		
Irrigable acreage when project is complete		154,101
Public land entered to June 30, 1923	31,056	
Public land withdrawn on June 30, 1923	16,632	
State land unsold on June 30, 1923	6,194	
Other private land, June 30, 1923	100,219	
Acreage bureau could supply, season of 1922		[1] 96,500
Acreage irrigated, season of 1922		[2] 46,370
Acreage cropped under irrigation, season of 1922		[3] 43,150
Acreage dry-farmed, season of 1922		[4] 14,250
Value of irrigated crops, season of 1922		[5] $590,500
Value of irrigated crops per acre cropped		[5] $13.70
Value of dry-farmed crops, season of 1922		[4] $138,641
Value of dry-farmed crops per acre cropped		[4] $9.75
Finances:		
Appropriations—		
Fiscal year 1923, amount of congressional authorizations	$671,556.34	
Disbursements and liabilities	191,410.81	
Unencumbered balance June 30, 1923		480,145.53
Fiscal year 1924, amount specified in appropriation act		140,000.00
Irrigation works, net construction cost:		
Fiscal year 1923	202,186.94	
to June 30, 1923		6,762,083.25

Investment to date.	Reclamation fund.	Judgments Court of Claims.	Increase of compensation (net).	Total.
Disbursements and net transfers	$7,128,246.41	$2,674.64	$90,910.97	$7,221,832.02
Less collections	347,345.03			347,345.03
Net investment June 30, 1923	6,780,901.38	2,674.64	90,910.97	6,874,486.99

[1] Includes 30,000 acres on Chinook division.
[2] Includes 28,200 acres on Chinook division.
[3] Includes 25,000 acres on Chinook division.
[4] Exclusive of Chinook division.
[5] Includes $388,400 on Chinook division.

Status of current accounts receivable as of June 30, 1923.

	Due.		Collected.		Other credits to June 30, 1923.	Uncollected June 30, 1923.
			Cash.			
	Fiscal year, 1923.	To June 30, 1923.	Fiscal year, 1923.	To June 30, 1923.		
Charges paid in advance				$1,114.00		
Revenues:						
Rentals of irrigating water	$19,637.09	$176,106.28	$18,608.63	152,148.26	$487.21	$23,470.81
Rentals of grazing and farming lands	3,955.56	27,139.71	4,249.16	26,732.49	20.88	386.34
Total	23,592.65	203,245.99	22,857.79	178,880.75	508.09	23,857.15
Miscellaneous uncollected						1,169.14
Other miscellaneous collections (Reclamation fund)			12,715.01	167,350.28		
Grand total collections			35,572.80	347,345.03		

ACTIVITIES DURING THE FISCAL YEAR.

Enlargement of Nelson Reservoir to 66,800 acre-feet capacity was completed; extension of lateral systems in the vicinity of Hinsdale and Glasgow was continued; a small mileage of operation and maintenance roads was built; and a small amount of drainage work was done.

St. Mary Canal.—Thirty-eight hundred linear feet of canal bank were rebuilt to prevent excessive leakage.

Operation and maintenance.—Thirty miles of laterals, waste water ditches, and smaller canals were cleaned with the Ruth dredger at a cost of about $152 per mile. Six thousand acre-feet of water were delivered to 214 users on the Malta and Glasgow divisions, and 33,300 acre-feet, including 7,055 acre-feet of St. Mary supplemental water, were diverted by the various canal companies on the Chinook division.

Twenty-eight thousand five hundred and eighty acre-feet of water were stored in Sherburne Lakes Reservoir between June 20 and July 18. Approximately one-half of the water stored was diverted to Milk River, the rest being wasted.

The St. Mary Canal was operated from May 20 to September 30. Eighty-one thousand one hundred acre-feet of water were diverted from St. Mary River and 66,090 acre-feet delivered to the North Fork of Milk River.

A settlement campaign was commenced by the Great Northern Railway.

Operation data, Milk River project, by calendar years.

Item.	1917	1918	1919	1920	1921	1922
Acreage for which bureau was prepared to supply water	45,000	58,750	58,900	68,600	[1] 94,100	[2] 96,500
Acreage irrigated	11,058	24,842	25,485	24,330	[3] 42,400	[4] 46,370
Miles of canal operated	[5] 204	[5] 254	[5] 317	[5] 361	[5] 247	[5] 255
Water diverted	[6] 68,503	[6] 74,924	[6] 86,680	[6] 80,786	[7] 54,444	[8] 102,832
Water delivered to the land (acre-feet)	[5] 11,195	[5] 16,900	[5] 21,500	[5] 10,460	[5] 6,190	[5] 6,068
Per acre of land irrigated (acre-feet)	[5] 1.01	[5] 0.68	[5] 0.84	[5] 0.58	[5] 0.54	[5] 0.51

[1] Includes 27,727 acres on Chinook division. Reduction on Malta and Glasgow divisions due to better data on irrigable areas.
[2] Includes 30,000 acres on Chinook division.
[3] Includes 26,000 acres on Chinook division.
[4] Includes 28,200 acres on Chinook division.
[5] Does not include Chinook division.
[6] Includes water for Nelson reservoir.
[7] Includes water for Nelson reservoir, but does not include 33,335 acre-feet diverted for Chinook division.
[8] Includes water for storage in Nelson reservoir and 27,655 acre-feet diverted on the Chinook division.

Settlement data of irrigated district, Milk River project.

Item.	1918	1919	1920	1921	1922
Total number of farms on project [1]	217	249	466	364	298
Population	[2] 688	[2] 757	[2] 867	[2] 816	[2] 1,057
Number of irrigated farms	184	247	230	178	209
Operated by owners or managers	140	186	208	134	130
Operated by tenants	44	61	22	44	79
Population	600	750	763	484	651
Number of towns	9	11	[2] 15	[2] 15	[2] 15
Population	6,000	6,500	[2] 7,796	[2] 7,170	[2] 7,100
Total population on farms and towns	6,688	7,257	[2] 8,663	[2] 7,986	[2] 8,157
Number of public schools	18	20	[2] 38	[2] 38	[2] 38
Number of churches	18	22	[2] 25	[2] 25	[2] 25
Number of banks	15	[2] 23	[2] 25	[2] 24	[2] 23
Total capital stock	$525,000	[2] $780,000	[2] $765,000	[2] $825,000	[2] $843,000
Amount of deposits [3]	$3,219,000	[2] $5,279,730	[2] $4,500,000	[2] $3,562,000	[2] $4,350,000
Number of depositors [3]	[2] 11,640	[2] 17,600	[2] 14,000	[2] 12,500	[2] 12,000

[1] Total number farms reported on crop census.
[2] Includes Chinook division.
[3] Deposits received from large area not in project.

MONTANA, SUN RIVER PROJECT.

GEO. O. SANFORD, project manager, Great Falls, Mont.

The Sun River project is located in Cascade, Chouteau, Lewis and Clark, and Teton Counties, lying to the north and west of Great Falls, Mont. It is served by lines of the Great Northern and the Chicago, Milwaukee & St. Paul Railways. The sources of water supply are Sun River and its tributaries, Deep Creek, Bowl Creek, and Basin Creek. The average elevation of the irrigable area is about 3,700 feet above sea level; the soil is loam, clay, and alluvium. The average annual rainfall is 10.8 inches; the average annual temperatures are: Maximum, 96° F.; minimum, −33° F.; mean, 44° F. The length of the irrigation season is from May 1 to October 10, 163 days. The principal crops are hay, grain, vegetables, live stock, and dairy products; the principal markets are Great Falls, St. Paul, Minneapolis, and Chicago.

The Fort Shaw division is watered by a canal system taking water from the Sun River. For the irrigation of lands north of Sun River, water is diverted from the North Fork of Sun River and is carried through Pishkun, Sun River Slope, and Greenfields Canals to the head of the irrigable lands in Greenfields division. The distribution system has been built for the irrigation of 25,000 acres in part 1 of Greenfields division, and for 2,300 acres in Big Coulee division. That for about 12,000 acres in part 2 of Greenfields division is under construction.

Plans for future development provide for storage works on the upper North Fork of Sun River, enlargement of Pishkun, Sun River Slope, and Greenfields Canals, and construction and extension of lateral systems under the canals. Possible future development may include the diversion of Bowl and Basin Creeks across the Continental Divide into Sun River drainage, the enlargement of Willow Creek Reservoir, and diversion of water from North Fork of Sun River thereto, the enlargement of Pishkun Reservoir and diversion of water from Deep Creek thereto, storage works on Muddy Creek and in Benton Lake, and canal systems for the Vaughn and Benton divisions.

SUMMARY OF DATA FOR SUN RIVER PROJECT TO END OF FISCAL YEAR 1923.

Areas and crops:		
Irrigable acreage when project is complete		158,851
Public land entered to June 30, 1923	42,348	
Public land withdrawn on June 30, 1923	38,026	
State land unsold on June 30, 1923	9,181	
Other private land, June 30, 1923	69,296	
Acreage bureau could supply, season of 1922		42,465
Acreage irrigated, season of 1922		20,537
Acreage cropped under irrigation, season of 1922		19,881
Acreage dry-farmed, season of 1922		3,507
Value of irrigated crops, season of 1922		$380,690
Value of irrigated crops per acre cropped		$16.35
Finances:		
Appropriations—		
Fiscal year 1923, amount of congressional authorizations	$368,740.81	
Disbursements and liabilities	340,791.92	
Unencumbered balance June 30, 1923		$27,948.89
Fiscal year 1924, amount specified in appropriation act		145,000.00

	Fiscal year 1923.	To June 30, 1923.
Irrigation works:		
Net construction cost	$210,522.06	$4,248,361.84
Less water-right contracts, project lands 12,917.85 acres	[1] 4,570.80	423,127.04
Balance	215,092.86	3,825,234.80

	Calendar year 1922.	To Dec. 31, 1922.	Fiscal year 1923.	To June 30, 1923.
Net operation and maintenance cost	$14,569.42	$192,237.02	$13,404.24	$199,251.24
Less:				
Charges billed or contracted	13,819.19	163,302.05	13,432.44	162,915.30
Penalties	478.88	1,753.69	579.77	2,036.58
Discounts	[1] 306.64	[1] 2,737.46	[1] 170.71	[1] 2,849.78
Total	13,991.43	162,318.28	13,841.50	162,102.10
Balance	577.99	29,918.74	[1] 437.26	37,149.14

[1] Contra.

Summary of data for Sun River project to end of fiscal year 1923—Continued.

Investment	Reclamation fund.	Judgments Court of Claims.	Increase of compensation (net).	Total.
Disbursements and net transfers	$4,584,631.21	$1,585.35	$63,796.14	$4,650,012.70
Less collections	433,636.00			433,636.00
Net investment June 30, 1923	4,150,995.21	1,585.35	63,796.14	4,216,376.70

Status of current accounts receivable as of June 30, 1923.

	Due.		Collected.			Uncollected June 30, 1923.
			Cash.		Other credits to June 30, 1923.	
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.		
To return net construction cost:						
Water-right charges	$11,563.86	$160,357.20	$5,036.87	$140,900.36	$96.67	$19,360.17
Charges paid in advance			[1] 236.71	29,181.70		
To return net operation and maintenance cost:						
Operation and maintenance charges, project lands (10,133.22 acres)	13,432.44	162,915.30	7,935.10	122,618.61	2,870.50	37,426.19
Charges paid in advance				10.55		
Penalties and interest			579.74	2,036.55	.03	
Revenues:						
Rentals of irrigating water	13,357.02	48,244.88	8,456.00	21,121.30	230.69	26,892.89
Rentals of grazing and farming lands	3,216.26	31,332.81	3,370.14	26,725.14		4,607.67
Total	16,573.28	79,577.69	11,826.14	47,846.44	230.69	31,500.56
Water rental charges paid in advance			73.36	73.36		
Miscellaneous uncollected						1,606.81
Other miscellaneous collections (Reclamation fund)			6,003.13	90,968.43		
Grand total collections			31,217.63	433,636.00		

[1] Contra.

Uncollected construction water right charges as of June 30, 1923, 12.1 per cent of total accruals.
Uncollected operation and maintenance charges as of June 30, 1923, 23 per cent of total accruals.

ACTIVITIES DURING FISCAL YEAR.

Greenfields division.—Proposals for the construction of laterals and structures for the irrigation of about 12,000 acres of land in part 2, Greenfields division, were opened June 6, 1922, and contracts awarded to the low bidders. All earthwork was completed early in the spring of 1923. The structural contractor was making slow progress and will not finish the work until the latter part of the present season. A contract for the construction of a reinforced concrete highway bridge, two spans, each 21 feet long, was awarded October 21, 1922, and the work completed June 15, 1923.

Seepage on the Greenfields division has been increasing since 1920 and plans were approved to begin the construction of drainage works in 1922. A drag-line excavator was transferred from the Riverton project and work started on open drain A, August 31. This drain was finished early in the spring and work started on

open drain C, which was completed by June 30. A total of 5.1 miles of drains was excavated during the fiscal year. A second drag line was transfered from Riverton in May, 1923, and work started on the electrification of the two drag lines and the construction of transmission lines to carry electrical energy from the substation of the Montana Power Co., about 9 miles west of Fairfield, to the seeped areas where additional drains are to be excavated. At the end of the fiscal year the transmission lines were completed and the first electric drag line was ready to begin excavating. Work was started on changing the second drag line from gas to electrically operated.

Considerable trouble was experienced in maintaining Greenfields canal in the vicinity of mile 3, where it follows along the sloping hillside of Big Coulee. Plans were approved for making a water-tight canal for a distance of 1,700 feet by placing a tar and rag-felt diaphragm on top of the first concrete lining and then a second layer of reinforced concrete 3 inches in thickness. This work was started early in May and completed June 22, 1923.

Fort Shaw division.—The canal system was successfully operated for the irrigation of 8,115 acres of land.

The season of 1923 started under favorable conditions. The rainfall in May was below the average and there were a few hot days in June, but during the last half of the month heavy rains were of frequent occurrence and the total precipitation was 5.22 inches, the greatest of record for June. As a result all crops were in excellent condition.

Operation data, Sun River project, by calendar years.

Item.	1917	1918	1919	1920	1921	1922
Acreage for which bureau was prepared to supply water	16,224	14,978	40,057	40,057	40,057	42,465
Acreage irrigated	6,675	7,569	11,496	14,780	21,750	20,537
Miles of canal operated	100	96	244	250	267	267
Water diverted (acre-feet)	25,481	30,087	42,863	75,595	88,258	64,683
Water delivered to land (acre-feet)	9,091	11,193	24,080	21,653	30,300	24,200
Per acre of land irrigated (acre-feet)	1.36	1.48	1.9	1.47	1.39	1.17

Settlement data, Fort Shaw and Greenfields divisions, Sun River project.

Item.	1917	1918	1919	1920	1921	1922
Total number of farms on project	254	239	212	500	500	500
Population	476	508	542	1,000	1,000	1,000
Number of irrigable farms	176	187	201	354	387	393
Operated by owners of managers	120	118	151	264	290	275
Operated by tenants	56	69	50	90	97	118
Population	476	508	542	861	949	978
Number of towns	8	8	8	8	4	4
Population	168	158	155	685	378	401
Total population in towns and on farms	644	666	697	1,685	1,378	1,401
Number of public schools	4	4	4	17	17	17
Number of churches	4	4	4	11	11	11
Number of banks	1	1	1	[1] 5	[1] 3	3
Total capital stock	$20,000	$20,000	$20,000	$110,000	$65,000	$71,500
Amount of deposits	$95,000	$98,000	$110,000	$391,121	$150,000	$158,000
Number of depositors	310	390	400	[1] 1,278	780	740

[1] Applies to whole project rather than to the two divisions named.

MONTANA-NORTH DAKOTA, LOWER YELLOWSTONE PROJECT.

H. A. Parker, project manager, Savage, Mont.

The Lower Yellowstone project is situated on the west side of the Yellowstone River in eastern Montana and western North Dakota. The source of water supply is the Yellowstone River, diversion from which into the main canal is at a point 18 miles below Glendive. Irrigation works have been constructed to deliver water to about 58,000 acres. Water is available for practically the entire irrigable area. The length of the irrigation season depends upon the amount of precipitation in the spring. May 1 to October 10, 163 days, is the maximum period of water deliveries. The average elevation is 1,900 feet above sea level. The average number of days between the last killing frost in the spring and the first in the fall is 129. Since 1905 the average annual rainfall has been about 14.4 inches. The average of the highest temperature is 103° F., and the average of the lowest is 35° F. Some alkali and gumbo are found in scattering low tracts, but the project as a whole has a deep sandy loam soil. As the irrigable area of the project is a long and narrow tract with cross drainage creeks at intervals of 3 to 6 miles, seepage has not been serious. The duty of water is about 1.5 acre-feet per acre. The principal crops are alfalfa, grain, sugar beets, potatoes, and corn. Billings, Mont., is the market for sugar beets; Duluth and Minneapolis, Minn., for grain; Chicago and the South for potatoes. Forage crops are consumed locally.

SUMMARY OF DATA FOR LOWER YELLOWSTONE PROJECT TO END OF FISCAL YEAR 1923.

Areas and crops:		
Irrigable acreage when project is complete		59,529
Public land entered to June 30, 1923	13,636	
Public land withdrawn on June 30, 1923	2,412	
State land unsold on June 30, 1923	986	
Railroad land unsold on June 30, 1923	95	
Other private land, June 30, 1923	42,400	
Acreage bureau could supply, season of 1922		40,200
Acreage irrigated, season of 1922		15,599
Acreage cropped under irrigation, season of 1922		15,400
Acreage dry farmed, season of 1922		13,470
Value of irrigated crops, season of 1922		$334,100
Value of irrigated crops per acre cropped		$21.68
Value of dry-farmed crops, season of 1922		$157,940
Value of dry-farmed crops per acre cropped		$11.88
Finances:		
Appropriations—		
Fiscal year 1923, amount of congressional authorizations	$187,997.77	
Disbursements and liabilities	82,753.26	
Unencumbered balance June 30, 1923		$105,244.51
Fiscal year 1924, amount specified in appropriation act		120,000.00

	Fiscal year, 1923.	To June 30, 1923.
Finances:		
Irrigation works—		
Net construction cost	$66,543.62	$3,632,949.27
Less water-right contracts: Project lands (58,248.11 acres); other lands (approximate 1,281 acres)		3,614,104.21
Balance	66,543.62	18,845.06

	Calendar year, 1922.	To Dec. 31, 1922.	Fiscal year, 1923.	To June 30, 1923.
Finances:				
Irrigation works—				
Net operation and maintenance cost [1]	[2] $87,782.78	$204,172.49	$41,115.78	$221,920.56
Less—				
Charged bills or contracted [3]	[2] 89,348.60	204,174.53	37,153.52	199,417.21
Penalties		2.59		2.59
Discounts (contra)		[2] 4.63		[2] 4.63
Total	[2] 89,348.60	204,172.49	37,153.52	199,415.17
Balance	1,565.82		3,962.26	22,505.39

[1] Actual cost for the year	$31,531.55
Less adjustment	119,314.33
Net	[2] 87,782.78
[2] Contra.	
[3] Actual charges billed during year	$41,910.84
Less adjustment	131,259.44
Net	[2] 89,348.60

Summary of data for Lower Yellowstone project to end of fiscal year 1923—Contd.

	Reclamation fund.	Judgments, Court of Claims.	Increase of compensation (net).	Total.
Finances:				
Investment—				
Disbursements and net transfers	$3,999,663.73	$12,835.88	$27,719.01	$4,040,218.62
Less collections	299,525.49			299,525.49
Net investment June 30, 1923	3,700,138.24	12,835.88	27,719.01	3,740,693.13

Status of current accounts receivable as of June 30, 1923.

	Due.		Collected.			Uncollected June 30, 1923.
			Cash.		Other credits to June 30, 1923.	
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.		
To return net construction cost:						
Water-right charges		$41,135.10		$41,135.10		
Charges paid in advance				197.60		
To return net operation and maintenance cost:						
Operation and miscellaneous charges, project lands (37,195.87 acres)	$49,932.24	194,102.80	$17,024.45	62,359.28	$4.63	$131,738.89
Charges paid in advance			[1] 101.00			
Penalties and interest				2.59		
Revenues:						
Rentals of irrigating water	1,242.60	123,265.68	2,400.93	121,869.18		1,396.50
Rentals of grazing and farming lands	273.25	2,974.62	195.25	2,863.62		111.00
Total	1,515.85	126,240.30	2,596.18	124,732.80		1,507.50
Miscellaneous uncollected						70.80
Other miscellaneous collections (reclamation fund)			953.15	71,098.12		
Grand total collections			20,472.78	299,525.49		

[1] Contra.

Uncollected operation and maintenance charges as of June 30, 1923, 68 per cent of total accruals.

ACTIVITIES DURING FISCAL YEAR.

Construction work consisted of the completion of the Thomas Point pumping plant and the continuation of lateral extensions, both earthwork and structures. Several worn-out wooden structures were replaced with concrete. The construction work required to deliver water to all project land was practically complete with the exception of a few minor lateral extensions and additional turnouts, which are put in as required. About 330 structures were built and 54,000 cubic yards of earth excavated during the year.

The silt problem is serious, particularly on the first 10 miles of main canal. About 250,000 cubic yards of silt had accumulated in this distance and a start was made toward its removal. It is the intention to completely clean this during the calendar years 1923 and 1924. Draglines will be employed, and one new machine was purchased recently for this purpose. One Ruth ditch cleaner was operated continuously during the summer months on laterals and

had the system in fairly good condition. About 83,400 cubic yards have been removed to date at a unit price of $0.08 per cubic yard. Worn-out wooden structures were being replaced, mainly with concrete, as required.

Operation data, Lower Yellowstone project, by calendar years.

Item.	1917	1918	1919	1920	1921	1922
Acreage for which bureau was prepared to supply water	42,288	42,232	42,167	[1] 40,200	[1] 40,344	[1] 40,200
Acreage irrigated	15,744	21,075	21,300	19,120	19,980	15,599
Miles of canal operated	180	186	188	187	174	213
Water diverted (acre-feet)	60,205	51,445	70,029	47,375	64,972	49,280
Water delivered to land (acre-feet)	27,842	23,321	26,252	16,633	25,733	18,411
Per acre of land irrigated (acre-feet)	1.77	1.11	1.23	0.87	1.28	1.17

[1] District lands only.

Settlement data, Lower Yellowstone project.

Item.	[1] 1918	[1] 1919	[2] 1920	[2] 1921	[2] 1922
Total number of irrigable farms	514	514	543	572	575
Population	1,120	1,284	1,368	1,390	1,591
Number of irrigated farms	370	405	375	370	370
Irrigable farms operated by owners	200	204	226	178	200
Irrigable farms operated by tenants	75	85	94	117	114
Irrigable farms having neither owner nor tenant living thereon	165	166	172	277	261
Number of towns	8	8	8	8	8
Population	3,500	3,900	2,850	2,805	2,805
Total population in towns and on farms	4,620	5,184	[3] 4,218	4,195	4,396
Number of public schools	19	[4] 12	[4] 12	[4] 12	13
Number of churches	8	13	15	15	15
Number of banks	10	10	10	[5] 9	[5] 7
Total capital stock	$330,000	$330,000	$330,000	$335,000	$200,000
Amount of deposits	$2,000,000	$2,365,000	$2,331,000	$1,851,000	$1,425,000
Number of depositors	7,000	7,500	6,500	4,726	4,475

[1] Project on rental basis.
[2] Project operated under contracts with irrigation districts.
[3] Part of decrease due to exact census.
[4] Decrease in number of schools due to consolidation.
[5] Decrease in number of banks due to consolidation and one failure.

NEBRASKA-WYOMING, NORTH PLATTE PROJECT.

ANDREW WEISS, project manager, Mitchell, Nebr.

The North Platte project is situated in western Nebraska and eastern Wyoming. The source of water supply is the North Platte River. The irrigation plan provides for storage of flood waters of the river in Pathfinder Reservoir, located about 50 miles southwest of Casper, Wyo., and in smaller reservoirs along the canal lines, and diversion from the North Platte River by a dam near Whalen, Wyo., into the Interstate Canal, supplying water for lands on the north side of the river, and into the Fort Laramie Canal watering lands on the south side. A dam to be constructed near Guernsey, Wyo., will provide additional storage, form a regulating reservoir, and develop power. The Northport division, on the north side in the vicinity of Northport, Nebr., is watered from an extension of the Tri-State Canal.

Three irrigation districts have been formed. The Northport Irrigation District includes all of the Northport division; the Gering and Fort Laramie Irrigation District covers all of the Fort Laramie division in Nebraska; and the Goshen Irrigation District, organized during the fiscal year, covers all of the Fort Laramie division in Wyoming. The limit of area of farm units on all divisions is 80 acres for public and 160 acres for private land.

The railroads serving the project cities and towns, which have an estimated population of 29,900, are the Chicago, Burlington & Quincy and Union Pacific. The character of the soil varies from sandy loam on the major portion of the Interstate and Northport divisions to gumbo soil on portions of the Fort Laramie division. The principal products are alfalfa, cereals, corn, sugar beets, and potatoes, and the principal markets are Omaha, Nebr., Kansas City and St. Joseph, Mo., Denver, Colo., and central Wyoming. The length of the irrigating season is from April 1 to September 30 and the average rainfall amounts to 14.29 inches. The average temperature ranges between 98° maximum and −24° F. minimum.

SUMMARY OF DATA FOR NORTH PLATTE PROJECT TO END OF FISCAL YEAR 1923.

	Interstate.	Fort Laramie.	Northport.	Total.
Areas and crops:				
Irrigable acreage when project is complete	114,933	107,000	15,000	236,933
Public land entered to June 30, 1923	83,697	44,689	6,500	134,886
Public land withdrawn on June 30, 1923	1,443	15,511	500	17,454
State land unsold on June 30, 1923	529	7,325	1,400	9,254
Other private land, June 30, 1923	29,264	39,475	6,600	75,339
Acreage bureau could supply, season of 1922	113,436	44,091	4,712	162,239
Acreage irrigated, season of 1922	87,300	20,302	3,645	111,247
Acreage cropped under irrigation, season of 1922	87,300	20,090	3,445	110,835
Value of irrigated crops, season of 1922	$1,878,450.00	$312,050.00	$72,500.00	$2,263,000.00
Value of irrigated crops per acre cropped	$21.52	$15.55	$21.05	$20.42

Finances:		
Appropriations—		
Fiscal year 1923, amount of congressional authorizations	$1,726,162.31	
Disbursements and liabilities	1,705,754.57	
Unencumbered balance June 30, 1923		$20,407.74
Fiscal year 1924, amount specified in appropriation act		1,420,000.00

	Fiscal year 1923.	To June 30, 1923.
Irrigation works:		
Net construction cost	$1,049,244.33	$14,011,574.27
Less:—		
Funds advanced and unapplied credits	36,096.58	37,676.49
Water-right contracts—		
Project lands (108,803.07 acres)	34,426.67	7,862,989.53
Warren Act lands (approximately 125,873 acres)	53,969.62	1,073,633.50
Total	124,492.87	8,974,299.52
Balance	924,751.46	5,037,274.75

Summary of data for North Platte project to end of fiscal year 1923—Continued.

	Calendar year 1922.	To Dec. 31, 1922.	Fiscal year 1923.	To June 30, 1923.
Net operation and maintenance cost	$178,791.58	$1,609,453.54	$167,587.99	$1,693,539.13
Less:				
Charges billed or contracted	195,455.52	1,766,234.98	203,423.00	1,792,629.38
Penalties	7,849.27	24,351.68	6,014.72	25,212.38
Discounts	[1] 3,916.05	[1] 31,299.72	[1] 1,649.60	[1] 31,628.30
Total	199,388.74	1,759,286.94	207,788.12	1,786,213.46
Balance	[1] 20,597.16	[1] 149,833.40	[1] 40,200.13	[1] 92,674.33

	Reclamation fund.	Judgments, Court of Claims.	Increase of compensation (net).	Total.
Investment:				
Disbursements and net transfers	$16,143,949.25	$26,425.67	$321,428.92	$16,491,803.84
Less collections	3,682,415.94			3,682,415.94
Net investment June 30, 1923	12,461,533.31	26,425.67	321,428.92	12,809,387.90

[1] Contra.

Status of current accounts receivable as of June 30, 1923.

	Due.		Collected.			Uncollected June 30, 1923.
			Cash.		Other credits to June 30, 1923.	
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.		
To return net construction cost:						
Funds advanced and unapplied credits	$34,882.73	$36,462.64	$31,213.85	$32,793.76		$3,668.88
Water-right charges	395,881.76	2,375,985.27	142,419.02	1,675,079.77	$34,294.92	666,610.58
Total	430,764.49	2,412,447.91	173,632.87	1,707,873.53	34,294.92	670,279.46
Charges paid in advance			[1] 513.78	599.13		
To return net operation and maintenance cost:						
Operation and maintenance charges—						
Project lands (approximately 105,000 acres)	176,967.20	1,585,091.03	69,667.25	1,135,801.81	41,232.80	408,056.42
Warren Act lands (approximately 125,873 acres)	26,455.80	207,538.35	29,617.20	177,220.86	56.18	30,261.31
Total	203,423.00	1,792,629.38	99,284.45	1,313,022.67	41,288.98	438,317.73
Charges paid in advance			[1] 207.73	0.00	0.00	
Penalties and interest			5,721.18	24,789.80	422.58	
Revenues:						
Rental of irrigation water	8,883.99	168,841.72	9,791.12	168,255.61	2.00	584.11
Rentals of power and light	28,936.02	83,609.48	26,517.79	68,072.64	12,393.30	3,143.54
Rentals of grazing and farming lands	9,914.39	80,676.92	8,637.46	74,434.86		6,242.06
Total	47,734.40	333,128.12	44,946.37	310,763.11	12,395.30	9,969.71
Miscellaneous uncollected						4,561.18
Other miscellaneous collections (reclamation fund)			37,479.55	325,367.70		
Grand total collections			360,342.91	3,682,415.94		

[1] Contra.

Uncollected construction water-right charges as of June 30, 1923, 27.7 per cent of total accruals.
Uncollected operation and maintenance charges as of June 30, 1923, 24.4 per cent of total accruals.

ACTIVITIES DURING FISCAL YEAR.

Storage.—The land within the site for the Guernsey Reservoir was purchased at a total cost of approximately $100,000 and a road 2 miles in length was constructed to the dam site.

The inflow at the Pathfinder Reservoir was below normal and the carry-over at the end of the irrigation season was only 244,840 acre-feet. During the winter months necessary repairs to the linings of the South Tunnel outlets were effected.

Interstate Division.—Work was continued on the enlargement and strengthening of the Interstate Canal and the replacement of structures in the third lateral district under supplemental construction. On the completion of the Northport division, the Bucyrus class 14 drag line was moved from that division to the work on the Interstate Canal. One Monighan drag line worked the entire year.

Seven miles of canal were enlarged, 354,500 cubic yards of material being moved. One hundred and forty-two wooden structures in the third lateral district were replaced with concrete.

The Spottedtail outlet channel was completed. A concrete highway bridge was constructed over the Winters Creek outlet channel. Several old drainage channels were enlarged and extended requiring the use of two to three drag lines during the available working period.

As a result of a hot and dry season the demand for water was greater than in previous years and the amount of water delivered per acre irrigated was larger than for any previous year. On account of the limited capacity of the Interstate Canal it was necessary to deliver water on a rotation basis from June 13 to July 27 and from August 20 to 31. Three Ruth ditch-cleaning machines were operated with very satisfactory results; 130 miles of laterals were cleaned at a unit cost of 15 cents per cubic yard, field cost.

Fort Laramie Division.—Two electric drag lines continued work on the excavation of the Fort Laramie Canal, excavating 1,080,000 cubic yards of material and completing 17 miles of canal. The Horse Creek siphon on the canal was completed by Government forces and work begun on the Kiowa Creek siphon and the Brown's Canyon crossing. The structures on 20 miles of the canal were contracted. The Horse Creek lateral system, covering 1,868 acres of land in Wyoming and 12,623 acres in Nebraska, was completed in time for delivery of water at the beginning of the 1923 season. The earthwork on the lateral system under the Fort Laramie Canal between Horse Creek and Tunnel No. 3, covering 25,000 acres, was contracted and work was begun by Government forces and contractors on the construction of the concrete structures. A contract was let to R. S. Morrow & Son, of Omaha, Nebr., for the construction of Tunnel No. 3 on the Fort Laramie Canal. The tunnel will be 6,500 feet long, the inside measurement being 10 feet 3 inches. Construction work began during June, 1923.

One class 9½ electric drag line was operated continuously throughout the year, completing the Katzer drain in Wyoming and beginning work on the Kiowa drainage system in Nebraska. During the year 21.38 miles of open drain were completed, the total excavation being 430,000 cubic yards. A P. & H. drag line excavated several short drainage ditches. Work was begun on the construction of the Gering drain under a cooperative contract with the Gering Irrigation Dis-

trict. During the year 3.3 miles of drain were completed, requiring the excavation of 107,000 cubic yards of material and the construction of several structures, the principal of which was a concrete chute of 1,600 second-feet capacity.

The Fort Laramie Canal was operated to Horse Creek at Mile 67.5, water being delivered to the land under the Springer lateral system for the first time. Deliveries were made on demand on a water-rental basis to all land desiring the same. The system although new was operated with few breaks. The canal was operated continuously for the first 25 miles to furnish water for the Lingle power plant, with some difficulty at low heads owing to the settling of silt in the upper reaches of the canal, requiring a drag line for removal.

Northport division.—The construction of the Northport division was completed in the spring of 1923 and the construction forces and equipment moved to the Fort Laramie division. The Bucyrus class 14 drag line was transferred to the Interstate division and the electric drag line to the Shoshone project. Water could be delivered to all of the land on the division at the beginning of the irrigation season of 1923.

The Indian Creek drain and its branches on the Northport division was completed; 188,000 cubic yards of material were excavated from the 3.4 miles of drainage ditches.

Water was delivered through the Northport Canal for the first season, being available for 4,712 acres of land. Water was delivered on demand under the contract between the United States and the Northport Irrigation District.

Operation data, Interstate division, North Platte project, by calendar years.

Item.	1917	1918	1919	1920	1921	[1] 1922.
Acreage for which bureau was prepared to supply water	[2] 129,891	[2] 129,778	[2] 129,715	[2] 129,629	[2] 129,666	113,436
Acreage irrigated	[2] 92,553	[2] 97,908	[2] 99,418	[2] 97,640	[2] 97,400	87,300
Miles of canal operated	805	805	805	807	809	805
Water delivered to land (acre-feet)	[3] 177,472	[3] 204,819	[3] 201,505	[3] 175,153	[3] 186,328	222,509
Per acre of land irrigated (acre-feet)	[3] 2.13	[3] 2.31	[3] 2.27	[3] 1.99	[3] 2.14	2.55

[1] All data exclusive of North Platte Canal & Colonization Co. lands.
[2] Includes North Platte Canal & Colonization Co. lands.
[3] Exclusive of lands under North Platte Canal & Colonization Co. tract.

Operation data, Fort Laramie division, North Platte project, by calendar years.

Item.	1918	1919	1920	1921	1922
Acreage for which bureau was prepared to supply water	12,132	12,132	16,232	16,232	44,091
Acreage irrigated	4,865	6,258	8,530	12,150	20,302
Miles of canal operated	70	79	130	138	311
Water delivered to the land (acre-feet)	5,037	18,050	16,755	22,665	43,689
Per acre of land irrigated (acre-feet)	1.04	2.89	1.97	1.85	2.15

Operation data, Northport division, North Platte project.

Item.	1920	1921	1922
Acreage for which bureau was prepared to supply water	1,600	2,220	4,712
Acreage irrigated	1,220	2,250	3,645
Water delivered to the land (acre-feet)	1,526	3,864	11,722
Per acre of land irrigated (acre-feet)	1.27	1.75	3.02

Settlement data, Interstate division, North Platte project.

Item.	1918	1919	1920	1921	[1] 1922
Total number of farms on project	1,406	1,420	1,410	1,450	1,458
Population	4,500	4,500	5,000	5,700	5,300
Number of irrigated farms	1,274	1,310	1,300	1,340	1,340
Operated by owners or managers	774	860	800	710	720
Operated by tenants	500	450	500	630	620
Population	4,200	4,056	4,746	5,200	4,782
Number of towns	8	8	9	9	9
Population	11,000	11,610	14,382	14,400	14,400
Total population in towns and on farms	15,500	16,110	19,382	20,100	19,300
Number of public schools	40	40	40	40	40
Number of churches	25	25	26	26	26
Number of banks	16	21	21	27	12
Total capital stock	$352,000	$462,000	$777,500	$787,500	$475,000
Amount of deposits	$2,600,000	$3,100,000	$7,371,100	$6,834,400	$3,957,700
Number of depositors	7,200	7,500	12,000	11,200	650

[1] Statistics for previous years include some figures for Fort Laramie and Northport divisions.

Settlement data, Fort Laramie division, North Platte project.

Item.	1921	1922
Total number of farms on project	407	573
Population	1,500	1,086
Number of irrigated farms	190	320
Operated by owners or managers	105	244
Operated by tenants	85	76
Population	433	650
Number of towns	3	11
Population	2,900	5,000
Total population in towns and on farms	4,400	6,086
Number of public schools	10	20
Number of churches	1	16
Number of banks	[1] 8	12
Total capital stock	[2] $185,000	$285,000
Amount of deposits	[3] $1,039,600	$1,794,900
Number of depositors	5,500	360

[1] Lands on the Interstate and Fort Laramie divisions are tributary to 6 of the banks listed above.
[2] $155,000 of this amount is listed under similar caption on Interstate division.
[3] $919,600 of this amount is listed under similar caption on Interstate division.

Settlement data, Northport division, North Platte project.

Item.	1922	Item.	1922
Total number of farms on project	232	Total population in towns and on farms	2,220
Population	800	Number of public schools	7
Number of irrigated farms	50	Number of churches	5
Operated by owners or managers	19	Number of banks	2
Operated by tenants	31	Total capital stock	$50,000
Population	250	Amount of deposits	$827,000
Number of towns	2	Number of depositors	150
Population	1,400		

NEVADA, NEWLANDS PROJECT.

JOHN F. RICHARDSON, project manager, Fallon, Nev.

The Newlands project is located on the Southern Pacific Railroad, in Churchill, Storey, Lyon, and Washoe Counties, Nev. The water supply is from the Truckee and Carson Rivers. The average annual precipitation on the irrigable area, which is at an elevation of about 4,000 feet above sea level, is 4.94 inches. The principal crops are alfalfa, grain, potatoes, melons, and dairy products. Farm units range in size from 40 to 160 acres.

SUMMARY OF DATA FOR NEWLANDS PROJECT TO END OF FISCAL YEAR 1923.

Areas and crops:		
Irrigable acreage when project is complete		159,000
Public land entered to June 30, 1923	32,525	
Public land open to entry on June 30, 1923	4,112	
Public land withdrawn on June 30, 1923	25,486	
Indian land, June 30, 1923	23,877	
Railroad land unsold on June 30, 1923	20,000	
Other private land, June 30, 1923	53,000	
Acreage bureau could supply, season of 1922		73,747
Acreage irrigated, season of 1922		44,963
Acreage cropped under irrigation, season of 1922		42,393
Value of irrigated crops, season of 1922		$1,849,710
Value of irrigated crops per acre cropped		$43.63
Finances:		
Appropriations—		
Fiscal year 1923, amount of congressional authorizations	$867,380.82	
Disbursements and liabilities	565,462.56	
Unencumbered balance, June 30, 1923		$301,918.26
Fiscal year 1924, amount specified in appropriation act		735,000.00

	Fiscal year 1923.	To June 30, 1923.
Irrigation works:		
Net construction cost	$299,084.33	$6,990,498.85
Less water-right contracts, project lands (48,778 acres)	[1] 54,335.00	2,638,279.01
Balance	353,419.33	4,352,219.84

	Calendar year 1922.	To Dec. 31, 1922.	Fiscal year 1923.	To June 30, 1923.
Net operation and maintenance cost	$111,847.35	$968,472.89	$118,496.21	$1,044,213.12
Less:				
Charges billed or contracted	216,319.89	903,945.52	117,626.63	900,499.26
Penalties	2,453.82	8,425.63	3,991.28	11,288.97
Discounts	[1] 2,480.84	[1] 13,369.28	[1] 2,487.61	[1] 15,786.77
Total	216,292.87	899,001.87	119,130.30	896,001.46
Balance	[1] 104,445.52	69,471.02	[1] 634.09	148,211.66

	Reclamation fund.	Judgments Court of Claims.	Increase of compensation (net).	Total.
Investment:				
Disbursements and net transfers	$8,463,570.43		$80,083.31	$8,543,653.74
Less collections	1,609,105.20			1,609,105.20
Net investment June 30, 1923	6,854,465.23		80,083.31	6,934,548.54

[1] Contra.

NOTE.—Operation and maintenance charges billed or contracted for calendar year 1922 and to Dec. 31, 1922, and to June 30, 1923, include item of $95,500, representing amount of operation and maintenance deficit covered by contract dated May 25, 1922, with Truckee-Carson irrigation district.

Status of current accounts receivable as of June 30, 1923.

	Fiscal year 1923.	To June 30, 1923.	Cash.		Other credits to June 30, 1923.	Uncollected June 30, 1923.
			Fiscal year 1923.	To June 30, 1923.		
To return net construction cost:						
Water-right charges	$38,799.68	$545,370.05	$32,121.25	$514,775.66	$6,004.95	$24,589.44
Charges paid in advance			443.63	1,319.90		
To return net operation and maintenance cost:						
Operation and maintenance charges, project lands (68,923 acres)	117,626.63	804,999.26	97,741.12	688,981.95	23,878.12	92,139.19
Charges paid in advance			522.91	627.87		
Penalties and interest			3,675.89	10,937.07	351.90	
Revenues:						
Rentals of irrigating water	1,282.95	16,936.22	1,348.20	16,916.72		19.50
Rentals of power and light	23,226.19	184,360.56	23,328.63	157,512.41	25,487.75	1,360.40
Rentals of grazing and farming land	532.33	24,584.62	124.73	24,138.62		446.00
Total	25,041.47	225,881.40	24,801.56	198,567.75	25,487.75	1,825.90
Miscellaneous and uncollected						1,435.81
Other miscellaneous collections (reclamation fund)			9,970.13	193,895.00		
Grand total collections			169,276.49	1,609,105.20		

Uncollected construction water-right charges as of June 30, 1923, 0.223 per cent of total accruals.
Uncollected operation and maintenance charges as of June 30, 1923, 0.087 per cent of total accruals.

ACTIVITIES DURING FISCAL YEAR.

The distribution system was extended by the construction under small contracts of about 4.8 miles of laterals, involving about 32,177 cubic yards of earthwork.

In accordance with the contract executed March 3, 1923, with the Canyon Power Co., the work of installing a new 78-inch steel penstock from the reservoir to the Lahontan power plant was commenced during March, and considerable preliminary work, including the excavation of a tunnel under the left spillway of Lahontan Dam, was completed at the end of the fiscal year. Under this contract the power company transferred to the United States all of their filings and water rights on the Truckee River, thereby removing an obstacle in the way of the construction of the Spanish Springs Reservoir.

During April the location of the feeder canal for Spanish Springs Reservoir was commenced. This work was completed during June. Negotiations for securing right of way for this reservoir were in progress at the end of the year.

Drainage.—Construction of deep open drains under the contract dated January 22, 1921, with the Truckee-Carson irrigation district was continued. On June 30, 1923, drains aggregating 110 miles had been completed under this contract and 10.3 miles of other drains, charged to operation and maintenance, were excavated. Plans for additional drainage were being made at the end of the year to be constructed upon the completion of the present contract.

Operation and maintenance.—Portions of Truckee Canal tunnels Nos. 1 and 3, in which the concrete lining had shown signs of failure, were timbered as a temporary expedient pending permanent repairs.

For the season of 1923 the delivery of water for irrigation commenced about the 1st of April, although minor deliveries for young alfalfa and grain were made during March.

The Lahontan power plant was in operation during the entire year under lease by the Canyon Power Co. without a shut-down on account of water shortage.

The water supply from both the Truckee and Carson Rivers was ample for the area under irrigation.

Maintenance work was done by Government forces. A Ruth dredger for ditch cleaning was placed in operation on February 28, 1923, and at the end of June had cleaned 29.5 miles of laterals.

A contract dated February 16, 1923, with the city of Fallon was approved March 12, 1923. Under this contract a franchise was granted to the United States for a power line through the city of Fallon and the United States agreed to construct ditches to permit the removal of the Scott ditch from the city limits. This ditch work was completed during May.

Operation data, Newlands project, by calendar years.

Item.	1918	1919	1920	1921	1922
Acreage for which bureau was prepared to supply water	71,817	65,809	69,310	72,166	73,747
Acreage irrigated	42,311	44,324	45,610	46,160	44,963
Miles of canal operated	356	365	389	393	410
Water diverted (acre-feet)	266,927	317,424	295,225	314,241	499,508
Water delivered to land (acre-feet)	126,545	134,015	129,814	132,788	141,972
Per acre of land irrigated (acre-feet)	2.99	3.02	2.85	2.87	3.15

Settlement data, Newlands project.

Item.	1917	1918	1919	1920	1921	1922
Number of farms on project	600	610	675	785	870	906
Population	2,197	2,268	2,386	2,523	2,652	2,450
Number of irrigated farms	600	648	694	742	788	778
Operated by owners or managers	525	568	619	677	708	681
Operated by tenants	75	80	75	65	80	97
Population	2,197	2,268	2,386	2,523	2,652	2,450
Number of towns	5	5	5	5	5	5
Population	1,860	1,900	2,240	2,830	2,500	2,500
Total population, towns and on farms	4,057	4,168	4,626	5,353	5,152	4,950
Number of public schools	16	14	[1] 11	12	11	11
Number of churches	7	7	7	8	8	8
Number of banks	2	2	2	2	1	1
Capital stock	$116,000	$116,000	$150,000	$115,900	$75,000	$75,000
Amount of deposits	$371,240	$632,000	$790,000	$864,360	$677,104	$680,700
Number of depositors	775	1,214	1,860	2,500	2,000	1,700

[1] Fallon district schools consolidated in 1919.

NEW MEXICO, CARLSBAD PROJECT.

L. E. Foster, project manager, Carlsbad, N. Mex.

The Carlsbad project is located in Eddy County, N. Mex., on the Sante Fe Railway system. Project cities and towns are Carlsbad, population 3,000, and Otis, Loving, and Malaga, with a combined population of 440. The source of water supply is Pecos River. The length of the irrigation season is 260 days, which includes two weeks in winter. The average elevation of the irrigable area is 3,100 feet. The rainfall averages 14.25 inches. The average of recorded temperatures for a period of 21 years ranges from 112° to −7° F. The soil of the irrigable area is Pecos clay and sandy loam, with high lime content. The principal products are cotton, alfalfa, and miscellaneous grains and fruits. The principal markets are Carlsbad, Kansas City, Chicago, New Orleans, and Galveston. The irrigation plan provides for the storage of water in Lake McMillan and in Avalon Reservoir, both controlled by earth and rock-fill dams. Water is diverted at Avalon Reservoir into a canal system, which extends 25 miles in a southerly direction.

SUMMARY OF DATA FOR CARLSBAD PROJECT TO END OF FISCAL YEAR 1923.

Areas and crops:		
Irrigable acreage when project is complete		24,991
Public land entered to June 30, 1923	45	
Private land, June 30, 1923	24,946	
Acreage bureau could supply, season of 1922		24,991
Acreage irrigated, season of 1922		24,076
Acreage cropped under irrigation, season of 1922		22,430
Value of irrigated crops, season of 1922		$1,197,980
Value of irrigated crops per acre cropped		$53.41
Finances:		
Appropriations—		
Fiscal year 1923, amount of congressional authorizations	$88,675.96	
Disbursements and liabilities	42,350.46	
Unencumbered balance June 30, 1923		$46,325.50
Fiscal year 1924, amount specified in appropriation act		80,000.00

	Fiscal year 1923	To June 30, 1923.
Irrigation works:		
Net construction cost	[1] $1,374.86	$1,395,928.79
Less—		
Funds advanced and unapplied credits		7,980.06
Water-right contracts, project lands (25,040 acres)	14,391.75	1,423,892.75
Total	14,391.75	1,431,872.81
Balance	[1] 15,766.61	[1] 35,944.02

	Calendar year 1922.	To Dec. 31, 1922.	Fiscal year 1923.	To June 30, 1923.
Net operation and maintenance cost	[2] $55,587.90	$460,691.20	$43,386.26	$481,790.56
Less:				
Charges billed or contracted	53,557.10	447,736.24	53,847.83	447,736.24
Penalties	2,963.26	9,911.79	5,898.13	14,214.57
Discounts	[1] 1,558.97	[1] 5,917.21	[1] 1,043.09	[1] 6,129.90
Total	54,961.39	451,730.82	58,702.87	455,820.91
Balance	626.51	8,960.38	[1] 15,316.61	25,969.65

[1] Contra.

[2] Actual cost for the year $55,838.97
Less adjustment 251.07
Net 55,587.90

Summary of data for Carlsbad project to end of fiscal year 1923—Continued.

	Reclamation fund.	Increase of compensation (net).	Total.
Investment:			
Disbursements and net transfers	$1,923,596.70	$27,153.37	$1,950,750.07
Less collections	889,470.95		889,470.95
Net investment June 30, 1923	1,034,125.75	27,153.37	1,061,279.12

Status of current accounts receivable as of June 30, 1923, Carlsbad project.

	Due.		Collected.			Uncollected June 30, 1923.
			Cash.		Other credits to June 30, 1923.	
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.		
To return net construction cost:						
Funds advanced		$7,980.06		$7,980.06		
Water-right charges	$53,507.46	417,896.27	$59,957.65	382,467.73		$35,428.54
Total	53,507.46	425,876.33	59,957.65	390,447.79		35,428.54
Charges paid in advance			273.33	1,129.55		
To return net operation and maintenance cost:						
Operation and maintenance charges, project lands (25,040 acres)	53,847.83	447,736.24	68,098.91	391,380.60	$6,129.90	50,225.74
Penalties and interest			5,898.13	14,214.57		
Revenues:						
Rentals of irrigating water	383.25	19,241.69	383.25	19,241.69		
Rentals of grazing and farming lands	1,653.89	11,695.93	1,413.79	11,161.49		534.44
Total	2,037.14	30,937.62	1,797.04	30,403.18		534.44
Miscellaneous uncollected						87.51
Other miscellaneous collections (reclamation fund)			7,439.51	61,895.26		
Grand total collections			143,464.57	889,470.95		

Uncollected construction water-right charges as of June 30, 1923, 8.48 per cent of total accruals.
Uncollected operation and maintenance charges as of June 30, 1923, 11.22 per cent of total accruals.

ACTIVITIES DURING FISCAL YEAR.

Water was low in the Pecos River and storage reservoir at the beginning of the fiscal year and storage was entirely exhausted on August 15, 1922. The principal crop, which was cotton, suffered no damage, however, on account of water shortage. The season's yield of alfalfa was somewhat curtailed on account of insufficient water for the late crop. Although the yield of cotton and alfalfa was somewhat lower than the average, the price of each product was relatively high. The gross income for the project was appreciably higher than for the previous season and the farms generally made a satisfactory net return.

McMillan Reservoir did not fill during the winter of 1923 and storage was low at the end of June, but there was no shortage of water. The spring was late and crops were backward during the early development. Crop conditions had reached normal by the end of the fiscal

year and prospects were bright for an unusually good crop year. Considerable encouragement was received in the results of feeding cattle and lambs for market. Good profits were reported in feeding both young beeves and lambs in spite of the high local price of alfalfa and grain.

The financial condition of project water users was greatly improved, not only by reason of a good crop year, but principally because of the liquidation of old mortgages and chattel liens through loans made by the Federal land bank on project lands. The bank had completed loans during the fiscal year totaling $300,900; loans still pending amounted to $211,620. Construction and operation and maintenance collections amounting to $137,990.54 were made during he fiscal year, of which the principal amount was collected during the late winter and spring months of 1923.

Operation data, Carlsbad project, by calendar years.

Item.	1917	1918	1919	1920	1921	1922
Acreage for which bureau was prepared to supply water	24,775	24,775	24,991	24,991	24,991	24,991
Acreage irrigated	16,882	19,460	20,363	22,170	23,810	24,076
Miles of canal operated	45	45	45	45	45	45
Water diverted (acre-feet)	95,196	97,320	114,050	131,673	137,500	116,700
Water delivered to land (acre-feet)	39,589	47,380	48,933	53,644	59,371	56,687
Per acre of land irrigated (acre-feet)	2.33	2.43	2.4	2.42	2.49	2.36

Settlement data, Carlsbad project.

Item.	1917	1918	1919	1920	1921	1922
Total number of farms on project	[1] 627	[1] 660	[1] 741	[1] 770	[1] 769	[1] 796
Population	992	1,257	1,378	1,575	1,435	1,580
Number of irrigated farms	535	458	565	363	426	333
Operated by owners or managers	[2] 190	[2] 231	[2] 298	[2] 189	[2] 277	[2] 184
Operated by tenants	243	227	267	267	149	149
Population	992	1,257	1,378	1,575	1,435	1,580
Number of towns	4	4	4	4	4	4
Population	3,300	3,375	3,375	3,375	3,375	3,440
Total population in towns and on farms	4,292	4,632	4,753	4,950	4,810	5,020
Number of public schools	7	7	7	13	13	10
Number of churches	8	8	8	11	11	12
Number of banks	3	3	3	5	3	3
Total capital stock	$275,000	$275,000	$275,000	$275,000	$225,000	$225,000
Amount of deposits	$1,271,266	$1,238,432	$1,271,645	$1,049,924	$1,176,441	$1,106,300
Number of depositors	1,941	2,234	2,611	2,617	2,350	2,374

[1] Water-right applications; 333 farms irrigated and cropped, 1922.
[2] Many farms were operated by one man.

NEW MEXICO-TEXAS, RIO GRANDE PROJECT.

L. M. Lawson, project manager, El Paso, Tex.

The Rio Grande irrigation project is an international and an interstate project, including within its present established boundaries approximately 86,000 acres of land in the Elephant Butte irrigation district of New Mexico and 64,000 acres in the El Paso County water improvement district No. 1, of Texas, and approximately 25,000 acres in the Republic of Mexico. The population of the principal city, El Paso, Tex., and suburbs is 95,000, and the project lands and towns have an additional population of 26,000.

Flood waters of the Rio Grande are stored in the Elephant Butte reservoir. With an average rainfall of 10 inches the use of water for irrigation in addition is approximately 3 acre-feet per acre. The irrigation season normally is from February 1 to October 15. Practically all the lands of the project are in private ownership. All lands within the project limits in the United States are in irrigation districts, and contracts for repayment of construction charges, as well as yearly operation and maintenance cost, have been negotiated and executed between these districts and the United States.

The project is divided into four divisions, namely, the Rincon, Leasburg, Mesilla, and El Paso. Each of these divisions is furnished water supply by diversion from the Rio Grande. The last-named division utilizes an international diversion dam located near El Paso, and this structure, maintained jointly by the irrigators of both countries, also diverts the water into the main canal for the Mexican lands.

Construction of the storage feature is practically completed. On June 30, 1923, it was estimated that the distribution system, consisting of the construction of main diversions and reconstruction and extension of the old community ditches as the lateral system, was 85 per cent complete. The drainage system, when complete, will consist of 350 miles of deep, open drain, involving the excavation of 17,000,000 cubic yards, of which on June 30, 1923, 282.6 miles had been constructed.

Power development at Elephant Butte Dam consists of a small plant required for the operation of the water system and furnishing of lights. At the time of the construction of the dam six power gates and penstocks were incorporated in the structure, and it is estimated that a power plant with an output of 18,000 kilowatts could be constructed at some future date.

SUMMARY OF DATA FOR RIO GRANDE PROJECT TO END OF FISCAL YEAR 1923.

Areas and crops:		
Irrigable acreage when project is complete		150,000
Public land entered to June 30, 1923	1,500	
Public land open to entry on June 30, 1923	100	
Public land withdrawn on June 30, 1923	700	
State land unsold on June 30, 1923	1,000	
Other private land, June 30, 1923	146,700	
Acreage bureau could supply, season of 1922		116,000
Acreage irrigated, season of 1922		[1] 89,589
Acreage cropped under irrigation, season of 1922		[1] 84,412
Value of irrigated crops, season of 1922		[1] $4,479,670
Value of irrigated crops per acre cropped		$53.06
Finances:		
Appropriations—		
Fiscal year 1923, amount of congressional authorizations	$1,100,071.28	
Disbursements and liabilities	1,006,449.54	
Unencumbered balance June 30, 1923		$93,621.74
Fiscal year 1924, amount specified in appropriation act		900,000.00

	Fiscal year 1923.	To June 30, 1923.
Irrigation works:		
Net construction cost	$830,765.45	$12,146,114.43
Less—		
Nonreimbursable [2]		1,000,000.00
Funds advanced for construction	[3] 5,000.00	
Water-right contracts, project lands, 85,000 acres		7,650,000.00
Total	[3] 5,000.00	8,650,000.00
Balance	835,765.45	3,496,114.43

[1] Includes 548 acres in Palomas and 4,821 acres in Fort Hancock outside of project limits irrigated under surplus stored water contracts.

[2] 34 Stat. 1357.

[3] Contra. Amount shown on last year's report as "advanced for construction" was refunded during 1923.

Summary of data for Rio Grande project to end of fiscal year 1923—Continued.

	Calendar year 1922.	To Dec. 31, 1922.	Fiscal year 1923.	To June 30, 1923.
Net operation and maintenance cost	$213,545.62	$447,300.04	$181,557.60	$548,366.12
Less—				
Charges billed or contracted	215,949.89	448,673.99	217,861.40	450,585.50
Penalties	1,383.18	1,455.52	127.95	1,505.08
Discounts	[1] 1,709.98	[1] 4,486.44		[1] 4,486.44
Total	215,623.09	445,643.07	217,989.35	447,604.14
Balance	[1] 2,077.47	1,656.97	[1] 36,431.75	100,761.98

	Reclamation fund.	Rio Grande Dam, appropriation.	Increase of compensation (net).	Total.
Investment:				
Disbursements and net transfers	$13,209,667.73	$1,000,000.00	$400,089.89	$14,609,757.62
Less collections	2,117,191.84			2,117,191.84
Net investment June 30, 1923	11,092,475.89	1,000,000.00	400,089.89	12,492,565.78

[1] Contra.

Status of current accounts receivable as of June 30, 1923.

	Due.		Collected.			Uncollected June 30, 1923.
			Cash.		Other credits to June 30, 1923.	
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.		
To return net construction cost:						
Funds advanced and unapplied credits	[1] $5,000.00					
Water-right charges	76,500.00	$76,500.00	$76,491.00	$76,491.00		$9.00
Total	71,500.00	76,500.00	76,491.00	76,491.00		9.00
To return net operation and maintenance cost:						
Operation and maintenance charges, project lands (150,000 acres)	170,579.27	383,978.52	170,579.27	379,492.08	$4,486.44	
Warren Act lands (approximately 2,525 acres)	1,893.63	5,099.88	1,893.63	5,099.88		
Total	172,472.90	389,078.40	172,472.90	384,591.96	4,486.44	
Charges paid in advance			645.36	645.36		
Penalties and interest			127.95	1,505.08		
Revenues:						
Rentals of irrigating water	19,374.19	1,109,475.44	31,598.69	1,075,447.26		34,028.18
Rentals of power and light		2,243.33		2,243.33		
Rentals of grazing and farming lands	288.20	1,800.20	281.20	1,785.20		15.00
Total	19,662.39	1,113,518.97	31,879.89	1,079,475.79		34,043.18
Miscellaneous uncollected						63.76
Other miscellaneous collections (reclamation fund)			20,847.56	574,482.65		
Grand total collections			302,464.66	2,117,191.84		

[1] Amount shown on last year's report as "advanced for construction" was refunded during 1923.

Uncollected construction water-right charges as of June 30, 1923, 0.99 per cent of total accruals.
Uncollected operation and maintenance charges as of June 30, 1923, 10 per cent of total accruals.

ACTIVITIES DURING THE FISCAL YEAR.

Construction.—The value of the storage feature has been doubly demonstrated since the beginning of its service in 1915. Exceptionally high floods have been held back and years of extreme drought, including the season of 1922, have been passed over probably with little realization on the part of the project population of the amount of damages to property and loss of crops aggregating many times the cost of the dam which have been avoided. During the past year construction activities have been about equally divided between the distribution and drainage systems. With the construction of the Tornillo heading during January and February the last project main diversion was completed. The old community ditches have been taken over, reconstructed, and extended to form the main laterals for the distribution system. This construction has been under way since 1917 and has been prosecuted as rapidly as funds and opportunities between irrigation seasons would permit, and is now practically completed, the final step being the reshaping of the sections with Ruth ditching machines. The rapid increase in the cultivated area at the beginning of the 1923 season created a demand for the extension of the water service, and many new laterals were built or old ones extended during the last half of the fiscal year to meet this demand. With the diversions constructed, main canals and main laterals practically finished, the distribution system of the project is considered to be 85 per cent complete, the remaining work consisting principally of the construction of sublaterals to 160-acre deliveries with some improvements yet to be made to the main canals and laterals. During the fiscal year the principal work accomplished on main canals were additions to Leasburg Dam; improvements to the Leasburg, east side, and west side canals in the Mesilla Valley; improvements to the Franklin canal, and construction of the first four miles of the Tornillo canal in the El Paso Valley. Construction work on the lateral system consisted of the installation of structures on the old community ditches in the Rincon Valley. In the Mesilla Valley reconstruction of the old community ditches by Ruth ditching machines was completed. Several new laterals were constructed by drag line excavator or team crews, the first 3 miles of the Three Saints lateral and the remaining portion of the La Union East canal being reconstructed by drag line. Many new or additional structures were installed in old canals and laterals as well as on new ones. In the El Paso Valley, work on the lateral system consisted principally of the extension of the island system and the beginning of construction of the Tornillo system. All of the old community ditches not previously reconstructed were gone over with the Ruth ditching machine followed by installation of structures.

Drainage.—Construction of the drainage system has been prosecuted vigorously and continuously since 1917 to head off the ravages of a rapidly rising ground-water table, employing probably the largest group of excavating machines ever assembled for drainage of irrigated lands; 282.6 miles of deep, open drains had been constructed to June 30, 1923, out of a total planned system of approximately 350 miles, 38.1 miles of which were constructed during the past fiscal year, 1 mile in the Rincon Valley, 21 miles in the Mesilla Valley, and 16.1 miles in the El Paso Valley. The system is rapidly nearing completion and the results are most gratifying. In all areas to which

drains have been extended the ground water has been rapidly and effectively lowered. Solubility of alkali salts present (black alkali being almost entirely absent) and the pervious character of the sandy subsoil render leaching of the salt from the land a comparatively easy process, when the land is properly leveled and bordered, and the results which have been accomplished are very encouraging.

Repayments.—The first installment of construction charges was assessed by the irrigation districts during the season of 1922, the opening notices served on the districts in 1921 having been postponed one year. Assessments were made on the basis of a construction charge of $90 per acre and were levied on 50,000 acres in the Elephant Butte irrigation district for land opened in the Mesilla Valley and on 33,000 acres of land in the El Paso County water improvement district No. 1 for land opened in the El Paso Valley and the Texas portion of the Mesilla Valley, the first payment being 2 per cent of the announced construction charge of $90 per acre. For 1923 an additional area of 12,000 acres has been opened to construction charges in the El Paso County water improvement district.

Operation and maintenance.—During the season of 1922 the bureau delivered water to 84,200 acres of land on the project, the irrigation districts making all collections and paying the cost of operation and maintenance in accordance with notices served on them pursuant to their contracts with the Government. The districts placed a minimum charge on all land included within the opened area on which construction charges were assessed. In addition surplus stored water was furnished to 5,369 acres outside the project limits. On account of improved sluicing facilities and the large amount of construction or reconstruction work accomplished during the year, the amount of canal and lateral cleaning was greatly reduced. Favorable prices for cotton and a yield above the average proved the impetus for bringing in much new land, resulting in an appreciable increase in the area irrigated, the irrigation districts having received applications for a total of 92,600 acres within the project limits up to June 30, 1923. In addition surplus stored water was being supplied to approximately 6,000 acres outside the project limits.

Operation data Rio Grande project, by calendar years.

Item.	1917	1918	1919	1920	1921	1922
Acreage for which bureau was prepared to supply water	88,000	92,300	107,000	109,000	109,000	116,000
Acreage irrigated	64,308	64,781	70,000	[1] 73,346	[2] 85,580	[6] 89,589
Miles canal and drain operated	86	153	385	546	586	645
Water diverted (acre-feet)	[3] 622,177	[3] 613,638	[4] 603,711	[4] 677,953	[4] 782,366	998,728
Water delivered to land (acre-feet)	.....	[5] 348,295	[5] 174,945	[5] 226,464	[5] 197,086	204,452
Per acre of land irrigated (acre-feet)	8.0	5.37	2.5	2.95	2.55	2.28

[1] Land irrigated through Government operated distribution system only does not include approximately 10,000 acres in Picacho, Island, and Tornillo still irrigating from community ditch diverting direct from the river.
[2] Includes 1,120 acres in Fort Hancock.
[3] Measured at point of delivery from canals.
[4] Total diversions, including water wasted and rediverted from river below.
[5] Includes delivery to farms by Bureau of Reclamation operation and to heads of community ditches on project.
[6] Includes 548 acres in Palomas and 4,821 acres in Fort Hancock outside project limits irrigated under surplus stored water contract.

Settlement data Rio Grande project.

Item.	1918	1919	1920	1921	1922
Total number of farms	2,287	2,703	3,021	3,204	3,534
Population	10,259	12,890	12,199	11,774	11,267
Number of irrigated farms	2,287	2,703	3,021	3,222	3,534
Operated by owners	1,377	1,966	2,668	2,628	2,954
Operated by tenants	910	737	353	594	580
Number of towns	27	27	29	29	34
Population	87,997	89,316	[1] 100,235	101,235	110,442
Total population in towns and on farms	98,256	102,206	112,434	113,009	121,709
Number of public schools	52	54	102	103	49
Number of churches	82	83	105	106	110
Number of banks	18	17	14	13	13
Total amount of capital stock	$3,000,000	$3,250,000	$2,990,000	$2,950,000	$2,950,000
Amount of deposits	$32,000,000	$33,000,000	$30,898,499	$28,194,815	$30,000,000
Number of depositors	40,000	44,000	31,716	30,000	31,000

[1] 5,000 soldiers included in El Paso's population.

NORTH DAKOTA, WILLISTON PROJECT.

(Heretofore known as North Dakota Pumping project).

WILLIAM S. ARTHUR, project manager, Williston, N. Dak.

The Williston project is located in Williams County, N. Dak., on the Great Northern Railway. Williston is the principal town and the project headquarters. The Missouri River is the source of water supply. The irrigation season is 80 days; the average rainfall is 13 inches; the average high temperature is 99° and the average low −37° F. The principal products are alfalfa, dairy cows and hogs, corn, and potatoes. Public farm units are limited to 80 acres and private to 160 acres.

A central steam power plant is located near Williston adjoining Government-owned coal lands, where electrical energy is generated for the operation of the pumping stations, of which there are four. The plan of the Williston division provides for a series of motor-driven centrifugal pumps on a barge in the Missouri River, a settling basin receiving the water from the barge, and a main canal of 90 second-feet capacity extending along Little Muddy Creek to the power plant where two sets of steam-driven turbines operate centrifugal pumps for the higher lifts. From the main canal, about midway between the river and the power plant, electrically-driven pumps raise water 28 feet for the lands on the west side of Little Muddy Creek.

SUMMARY OF DATA FOR WILLISTON PROJECT TO END OF FISCAL YEAR 1923.

Areas and crops:		
Irrigable acreage when project is complete		10,753
Public land entered to June 30, 1923	254	
Public land open to entry on June 30, 1923	139	
State land unsold on June 30, 1923	23	
Private land, June 30, 1923	10,337	
Acreage bureau could supply, season of 1922		7,653
Acreage irrigated, season of 1922		1,583
Acreage cropped under irrigation, season of 1922		1,571
Acreage dry farmed, season of 1922		2,500
Value of irrigated crops, season of 1922		$52,230
Value of irrigated crops per acre cropped		$33.24
Value of dry-farmed crops, season of 1922		$25,000
Value of dry-farmed crops per acre cropped		$10
Finances:		
Appropriations—		
Fiscal year 1923, amount of congressional authorizations	$167,683.48	
Disbursements and liabilities	74,912.08	
Unencumbered balance June 30, 1923		$92,771.40
Fiscal year 1924, amount specified in appropriation act		100,000.00

HERETOFORE KNOWN AS WILLISTON DIVISION NORTH DAKOTA PUMPING PROJECT.

	Fiscal year 1923.	To June 30, 1923.
Net construction cost	[1] $421.43	$460,107.18
Less—		
Loss [2]	[1] 77,030.88	
Water-rights contracts, project lands 7,653 acres		290,803.74
Total	[1] 77,030.88	290,803.74
Balance	76,609.45	169,303.44

	Calendar year 1922.	To Dec. 31, 1922.	Fiscal year 1923.	To June 30, 1923.
Net operation and maintenance cost	$20,729.65	$342,835.87	$28,796.05	$357,244.00
Less—				
Loss		178,667.20		178,667.20
Charges billed or contracted [3]	19,673.71	162,249.91	9,857.83	158,349.82
Penalties	1,055.94	1,918.76	630.00	1,918.76
Total	20,729.65	342,835.87	10,487.83	338,935.78
Balance			18,308.22	18,308.22

[1] Contra.
[2] Adjustment of loss so as to confine amount to abandoned Buford Trenton division.
[3] Includes amount irrigation district has agreed to pay, but is not yet due.

Summary of data for Williston project to end of fiscal year 1923—Continued.

Investment to date.	Reclamation fund.	Increase of compensation (net).	Total.
Disbursements and net transfers	$1,189,089.68	$22,534.51	$1,211,624.19
Less collections	412,450.03		412,450.03
Net investment June 30, 1923	776,639.65	22,534.51	799,174.16

Status of current accounts receivable as of June 30, 1923.

	Due.		Collected cash.		Collected June 30, 1923.
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.	
Construction charges paid in advance				$8,250.63	
To return net operation and maintenance cost:					
Operation and maintenance charges, project lands (6,587.4 acres)	$25,899.10	$71,920.30	$1,370.00	26,677.75	$45,242.55
Penalties			630.00	1,918.76	
Revenues:					
Rentals of irrigating water		2,117.28		2,117.28	
Rentals of power and light	49,570.46	365,647.50	49,814.46	362,133.00	3,514.50
Rentals of grazing and farming lands		249.98		249.98	
Total	49,570.46	368,014.76	49,814.46	364,500.26	3,514.50
Miscellaneous uncollected					139.39
Other miscellaneous collections			530.87	11,102.63	
Grand total collections			52,345.33	412,450.03	

BUFORD TRENTON DIVISION (ABANDONED).

	Fiscal year 1923.	To June 30, 1923.
Net construction cost	[1] $1,099.26	$223,168.96
Less loss	[1] 1,099.26	223,168.96

	To Dec. 31, 1922.	To June 30, 1923.
Net operation and maintenance cost	$73,466.80	$73,466.80
Less:		
Loss	71,149.39	71,149.39
Charges billed	2,317.41	2,317.41
Total	73,466.80	73,466.80

[1] Contra.

Investment to date:	Reclamation fund.
Disbursements and net transfers	$311,229.60
Less collections	17,432.93
Net investment June 30, 1923	293,796.67

Status of current accounts receivable as of June 30, 1923.

	Due to June 30, 1923.	Collected—cash.	
		Fiscal year 1923.	To June 30, 1923.
To return net operation and maintenance cost:			
Operation and maintenance charges	$2,317.41	.....	2,317.41
Revenues:			
Rentals of irrigation water	31.75	.....	31.75
Rentals of grazing and farming lands	423.93	.....	423.93
Total	455.68	.....	455.68
Other miscellaneous collections	.....	$26.00	14,659.84
Grand total collections	.....	26.00	17,432.93

ACTIVITIES DURING THE FISCAL YEAR.

Two miles of small laterals were constructed. Wooden turnouts, crossings, and culverts were placed principally to replace others that were installed as a part of original construction. Three miles of laterals partially constructed in 1922 were brought up to capacity.

The commercial power contract with the city of Williston expired December 20, 1922, but before its expiration a new contract was executed with the city. The contract is for a period of 10 years, with provision for termination and for revision of rates and terms on 1 year's notice. Competition developed which endeavored to get the contract placed with private parties; but the officials of the city, maintaining their interest in the development of the project, executed the contract at rates which are estimated to yield 18 per cent more than the rates quoted by the competitors. The operation of the project is infeasible in its present stage of development without this commercial power contract, which makes it possible to hold together the principal parts of an operating organization throughout the year. Such an organization could not be disbanded and reassembled each year for irrigation operations alone. The commercial power output is now running about 5 per cent higher than in 1922.

The project mines its own coal from public lands adjoining the powerhouse site, and this mine, which is the only Government-operated coal mine in the United States, is a unique feature of the project; 12,180 tons of coal were mined at a cost of $29,173 or $2.39 per ton. The cost is 38 cents per ton higher than during the previous fiscal year owing to two causes—a smaller consumption in the irrigation months and new track and development, consisting exclusively of narrow work, the cost of which is included in the fiscal year 1923, whereas the benefits will be derived chiefly in the fiscal year 1924. The cost was 36 cents per ton below the average of the community.

SETTLEMENT AND DEVELOPMENT.

There is no public land available for entry. The problem is to reduce the size of private holdings, but here, as elsewhere in the United States, the tendency of the population is away from the farms to urban settlements.

Operation data, Williston project.

Item.	1919	1920	1921	1922
Area for which bureau was prepared to supply water	8,189	7,653	7,653	7,653
Acreage irrigated	2,446	2,810	2,080	1,583
Miles of canal operated	31	31	35	35
Water diverted (acre-feet)	4,028	4,000	2,383	1,942
Water delivered to land (acre-feet)	2,633	2,684	1,624	1,352
Water per acre of land irrigated (acre-feet)	1.08	0.97	0.78	0.85

Settlement data, Williston project.

Item.	1917	1918	1919	1920	1921	1922
Total number of farms on project	105	105	105	105	105	105
Population	190	195	200	200	210	220
Total number of irrigated farms				94	76	73
Operated by owners or managers	34	33	33	47	39	40
Operated by tenants	10	11	24	19	12	9
Operated by nonresidents				28	25	24
Population	155	160	181	194	200	212
Number of towns	2	2	2	2	2	2
Population	5,300	5,360	5,400	5,000	5,000	4,500
Population in towns and on farms	5,490	5,555	5,600	5,200	5,210	4,720
Number of public schools	6	6	6	6	6	6
Number of churches	6	6	6	6	7	7
Number of banks	4	4	4	3	3	2
Total capital stock	$235,000	$260,000	$260,000	$260,000	$260,000	$185,000
Amount of deposits	$1,800,000	$2,000,000	$1,756,000	$2,000,000	$1,800,000	$1,700,000
Number of depositors	3,500	3,800	3,600	5,010	3,600	3,500

OREGON, UMATILLA PROJECT.

H. M. Schilling, project manager, Hermiston, Oreg.

The Umatilla project is located in Umatilla and Morrow Counties and is traversed by the main line railroad of the Oregon-Washington Railroad and Navigation Co. The project towns are Hermiston, Umatilla, Irrigon, and Boardman.

The source of water supply is the Umatilla River, which has a drainage area covering 2,160 square miles. The mean annual run-off is 520,000 acre-feet.

The average elevation of the irrigable area is 470 feet above sea level, the average rainfall of 14 years is 8.62 inches, and the length of the irrigation season is 210 days. The principal products are alfalfa, fruits, vegetables, honey, and dairy produce. The building charges per acre of irrigable land are $60, $70, and $92, and the minimum charge for operation and maintenance for the irrigation season of 1922 is estimated to be $1.60 per acre for the East division, and $1.50 per acre for the West division, the respective irrigation districts being obligated to pay the total costs incurred by contract.

The irrigation plan of the east division provides for the diversion of water from the Umatilla River above Echo, Oreg., through a feed canal 24.5 miles in length to the Cold Springs Reservoir, which has a storage capacity of 50,000 acre-feet, whence it is delivered directly to the land through a system of canals and laterals. Water is also diverted from the Umatilla River near the mouth of Butter Creek by the Maxwell Canal and when available supplements that discharged from the reservoir.

For the west division water is diverted from the Umatilla River about halfway between Hermiston and Umatilla and is delivered directly to lands bordering the Columbia River in the vicinity of Umatilla, Irrigon, and Boardman.

SUMMARY OF DATA FOR UMATILLA PROJECT TO END OF FISCAL YEAR 1923.

Areas and crops:		
Irrigable acreage when project is complete		28,300
Public land entered to June 30, 1923	5,413	
Public land withdrawn on June 30, 1923	2,376	
Railroad land unsold on June 30, 1923	3,319	
Other private land, June 30, 1923	17,192	
Acreage bureau could supply, season of 1922		24,592
Acreage irrigated, season of 1922		13,273
Acreage cropped under irrigation, season 1922		10,188
Value of irrigated crops, season of 1922		$519,468
Value of irrigated crops per acre cropped		$50.99
Finances:		
Appropriations—		
Fiscal year 1923, amount of congressional authorizations		$465,023.17
Disbursements and liabilities		310,396.06
Unencumbered balance June 30, 1923		124,627.11
Fiscal year 1924, amount specified in appropriation act		900,000.00

	Fiscal year 1923.	To June 30, 1923.
Irrigation works:		
Net construction cost	$75,142.70	$2,874,027.84
Less:		
Water-right contracts—		
Project lands (24,347 acres)	17,969.48	2,700,273.97
Other lands (approximately 120 acres)		4,800.00
Total	17,969.48	2,705,073.97
Balance	57,173.22	168,953.87

	Calendar year 1922.	To Dec. 31, 1922.	Fiscal year 1923.	To June 30, 1923.
Net operation and maintenance cost	$34,193.79	$324,976.70	$34,732.77	$243,488.77
Less:				
Charges billed or contracted	36,068.31	331,517.95	36,068.31	331,517.95
Penalties	1,363.11	7,509.80	[1] 573.97	6,347.57
Discounts		[1] 3,277.56	[1] 8.87	[1] 3,286.43
Total	37,431.42	335,750.19	35,485.47	334,579.09
Balance	[1] 3,237.63	[1] 10,773.49	[1] 752.70	8,909.68

[1] Contra.

Summary of data for Umatilla project to end of fiscal year 1923—Continued.

	Reclamation fund.	Increase of compensation (net).	Total.
Investment:			
Disbursements and net transfers	$3,368,737.47	$37,159.53	$3,405,897.00
Less collections	824,264.61		824,264.61
Net investment June 30, 1923	2,544,472.86	37,159.53	2,581,632.39

Status of current accounts receivable as of June 30, 1923.

	Due.		Collected.			Uncollected June 30, 1923.
			Cash.		Other credits to June 30, 1923.	
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.		
To return net construction cost:						
Water-right charges	$65,142.17	$406,632.51	$51,583.91	$356,599.38		$50,033.13
Charges paid in advance			[1] 1,932.69	17,320.38		
To return net operation and maintenance cost:						
Operation and maintenance charges, project lands (24,347 acres)	28,856.06	279,386.24	30,688.24	244,462 03	$3,286.43	31,637.78
Other lands, approximately 120 acres	71.00	474.95	48.00	451.95		23.00
Total	28,927.06	279,861.19	30,736.24	244,913.98	3,286.43	31,660.78
Charges paid in advance			[1] 144.96	390.00		
Penalties and interest			[1] 573.97	6,347.57		
Revenues:						
Rentals of irrigating water	1,314.15	32,100.24	2,290.19	32,100.24		
Rentals of grazing and farming lands	570.90	1,579.50	520.90	1,529.50		50.00
Total	1,885.05	33,679.74	2,811.09	33,629.74		50.00
Miscellaneous uncollected						332.98
Other miscellaneous collections (Receiving fund)			8,214.75	165,063.56		
Grand total collections			90,694.37	824,264.61		

[1] Contra.

Uncollected construction water right charges as of June 30, 1923, 12 per cent of total accruals.
Uncollected operation and maintenance charges as of June 30, 1923, 11 per cent of total accruals.

ACTIVITIES DURING FISCAL YEAR.

East division.—The principal construction work in progress was the continuation of the improvement of the A Canal, of which 1.6 miles were enlarged and lined, involving the excavation of 15,038 cubic yards of class 1 material and the placing of 1,465 cubic yards of concrete lining. Two timber bridges were rebuilt and eight minor structures built in connection with the A Canal improvements.

In connection with betterments to the irrigation system as provided in the contract with the Hermiston irrigation district, 600 linear feet of B–3 Canal were lined. One timber bridge was rebuilt over the Hermiston drain.

The construction of lateral extensions was continued, about 5.7 miles of lateral being built; 500 linear feet of 24-inch, 9,432 linear feet of 20-inch, 12,707 linear feet of 16-inch, and 7,303 linear feet of

12-inch concrete pipe were laid, and 72 minor structures, containing 136 cubic yards of concrete, were built. All pipe used was manufactured by Government forces.

West division.—Original lateral construction was carried on intermittently throughout the year. The main canal was extended 1 mile to station 1453+00 and 1.4 miles of lateral were built; 3,438 linear feet of 16-inch and 2,837 linear feet of 15-inch concrete pipe were laid, 76 cubic yards of 2-inch concrete lining were placed, and 18 minor structures containing 25 cubic yards of concrete were built.

CROPS AND DEVELOPMENT.

Agricultural conditions were somewhat improved. Alfalfa brought a fair price. The number of dairy stock materially increased and the creamery at Hermiston furnished a cash market for cream. A few farmers are attempting diversification of crops and it is believed the movement will spread. Chickens and bees have proved good investments.

Operation data, Umatilla project, by calendar years.

Item.	1917	1918	1919	1920	1921	1922
Area for which bureau was prepared to supply water	24,247	24,300	24,300	24,395	24,400	24,592
Miles of canal operated	165	177	177	177	177	186
Acreage irrigated	7,327	9,100	10,533	12,030	13,150	13,273
Water diverted (acre-feet)	99,900	118,154	162,850	165,534	130,872	129,187
Water delivered to land (acre-feet)	45,365	48,163	53,500	50,651	57,492	59,313
Per acre of land irrigated (acre-feet)	6.10	5.61	5.10	4.21	4.37	4.47

Settlement data, Umatilla project.

Item.	1918	1919	1920	1921	1922
Total number of farms on project	869	875	1,000	1,000	1,000
Population	1,127	1,200	1,472	1,562	1,613
Number of irrigated farms	459	500	528	544	558
Operated by owners or managers	339	350	450	442	435
Operated by tenants	120	150	78	102	123
Population	1,200	1,200	1,280	1,562	1,613
Number of towns	4	4	4	4	4
Population	1,200	1,200	1,280	1,280	1,280
Population in towns and farms	2,327	2,400	2,752	2,842	2,893
Number of public schools	6	6	6	6	6
Number of churches	9	9	9	9	9
Number of banks	1	1	1	1	1
Capital stock	$25,000	$25,000	$25,000	$25,000	$25,000
Amount of deposits	$170,000	$232,000	$217,590	$235,367	$300,000
Number of depositors	1,000	1,129	1,200	1,200	1,200

OREGON-CALIFORNIA, KLAMATH PROJECT.

HERBERT D. NEWELL, project manager, Klamath Falls, Oreg.

The Klamath project is located in southern Oregon and northern California. The project is served by the Southern Pacific and the Oregon California and Eastern Railroads; Klamath Falls, with a population of about 5,500, is the principal project city, is the center of an extensive lumber industry, and as a shipping point ranks second in the State.

The average elevation of the irrigable lands is about 4,100 feet above sea level. The principal agriculatural products are alfalfa and grain; stock raising is practiced to a large extent; the dairying industry, begun several years ago, is increasing rapidly. The principal markets are Portland, Oreg., Sacramento, and San Francisco, Calif. The irrigation season usually begins about May 1 and ends on September 30.

The project derives its water supply principally from the Upper Klamath Lake, which is situated just north of Klamath Falls. Water for irrigation is diverted into the main canal at the lower end of the lake; a short distance below the point of diversion the main canal passes under the city of Klamath Falls by means of a concrete-lined tunnel 3,300 feet in length.

An important feature of the project is the reclamation of the bed of Tule Lake. The lands are first uncovered by causing the waters to recede; later the necessary irrigation works will be constructed. Tule Lake has no visible outlet; the lake-bed lands are being uncovered by the prevention of inflow and by evaporation. The principal works designed to prevent inflow are the Clear Lake Reservoir and the Lost River diversion canal. Clear Lake is located on the headwaters of Lost River and is in effect an evaporating basin covering an area of about 25,000 acres; surplus storage is available for the irrigation of about 12,000 acres. The diversion canal connects Lost River with the Klamath River; this canal diverts water entering Lost River below the Clear Lake Dam to the Klamath River.

About 20,000 acres in Langell Valley and 10,000 acres near Bonanza will be watered from Clear Lake Reservoir, the proposed Gerber Reservoir, and springs tributary to Lost River.

SUMMARY OF DATA FOR KLAMATH PROJECT TO END OF FISCAL YEAR 1923.

Areas and crops:		
Irrigable acreage when project is complete		169,397
Public land entered to June 30, 1923	5,917	
Public land withdrawn on June 30, 1923	20,776	
Private land, June 30, 1923	142,704	
Acreage bureau could supply, season of 1922		51,000
Acreage irrigated, season of 1922		[1] 36,000
Acreage cropped under irrigation, season of 1922		32,950
Value of irrigated crops, season of 1922		$537,140.00
Value of irrigated crops per acre cropped		$16.30
Finances:		
Appropriations—		
Fiscal year 1923, amount of congressional authorizations	$665,028.17	
Disbursements and liabilities	545,604.51	
Unencumbered balance June 30, 1923		$119,423.66
Fiscal year 1924, amount specified in appropriation act		700,000.00

	Fiscal year 1923.	To June 30, 1923.
Irrigation works:		
Net construction cost	$437,841.89	$3,978,175.73
Less water right contracts—		
Project lands (45,263 acres)	279,646.45	2,100,389.75
Warren Act lands (approximately 58,868 acres)	789,376.00	931,981.24
Other lands (approximately 22,072 acres)		133,888.40
Total	1,069,022.45	3,166,259.39
Balance	[2] 631,180.56	811,916.34

[1] Total irrigated area, 44,929 acres, including 8,929 acres of Van Brimmer lands and in miscellaneous pumping districts.
[2] Contra.

Summary of data for Klamath project to end of fiscal year 1923—Continued.

	Calendar year 1922.	To Dec. 31, 1922.	Fiscal year 1923.	To June 30, 1923.
Net operation and maintenance cost	$42,186.04	$544,908.95	$53,028.23	$578,556.15
Less:				
Charges billed or contracted	43,760.84	559,156.92	54,871.96	559,156.92
Penalties	938.09	2,657.63	68.12	2,691.90
Discounts	[2] 48.09	[2] 4,420.20	[2] 45.45	[2] 4,465.65
Total	44,650.84	557,394.35	54,894.63	557,383.17
Balance	[2] 2,464.80	[2] 12,485.40	[2] 1,866.40	21,172.98

	Reclamation fund.	Increase compensation (net).	Total.
Investment:			
Disbursements and net transfers	$4,814,059.69	$63,144.96	$4,877,204.65
Less collections	1,224,499.68		1,224,499.68
Net investment June 30, 1923	3,589,560.01	63,144.96	3,652,704.97

[2] Contra.

Status of current accounts receivable as of June 30, 1923.

	Due.		Collected.			
			Cash.		Other credits to June 30, 1923.	Uncollected June 30, 1923.
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.		
To return net construction cost:						
Water-right charges	$65,525.88	$567,811.58	$61,373.28	$537,270.01		$30,541.57
Charges paid in advance			100.10	422.71		
To return net operation and maintenance cost:						
Operation and maintenance charges, project lands (42,094 acres)	63,186.65	490,614.60	49,877.10	409,491.78	$30,059.60	51,063.22
Warren Act lands (approximately 8,335 acres)	632.96	2,092.32	556.64	1,939.68		152.64
Other lands (approximately 5,000 acres)		200.00				200.00
Total	63,819.61	492,906.92	50,433.74	411,431.46	30,059.60	51,415.86
Charges paid in advance			[2] 52.09	55.81		
Penalties and interest			68.12	2,691.90		
Revenues:						
Rentals of irrigating water	824.01	43,013.63	871.87	42,537.83		475.80
Rentals of power and light	2,214.83	8,234.83	2,214.83	8,234.83		
Rentals of grazing and farming lands [3]	143,053.67	158,406.16	145,306.39	157,962.16		444.00
Total	146,092.51	209,654.62	148,393.09	208,734.82		919.80
Miscellaneous uncollected						2,602.89
Other miscellaneous collections (reclamation fund)			[2] 122,234.53	63,892.97		
Grand total collections			138,081.71	1,224,499.68		

[2] Contra.

	Accrued.	Collected.
[3] Fiscal year 1923	$16,792.23	$19,044.95
Prior (adjustment)	126,261.44	126,261.44
Total	143,053.67	145,306.39

Uncollected construction water-right charges as of June 30, 1923, 5.4 per cent of total accruals.
Uncollected operation and maintenance charges as of June 30, 1923, 10.4 per cent of total accruals.

ACTIVITIES DURING FISCAL YEAR.

Storage system.—At the dam site for the Gerber Reservoir detail investigations were made to determine foundation conditions. Eight test pits were excavated to a depth sufficient to permit a thorough examination. The indications are that a suitable foundation can be secured at a depth not to exceed 20 feet below the surface.

Tule Lake division.—The canal and lateral system had been completed for an area of 10,000 acres. For the irrigation of the lands in this division 14 miles of canal and 37 miles of laterals had been constructed by Government forces using drag-line excavators. A total of 395 timber structures and 95 structures of reinforced concrete had been installed, practically all by contract.

Langell Valley division.—The Malone diversion dam on Lost River was completed, the principal quantities in the dam being 425 cubic yards of concrete and 18,500 cubic yards of earth embankment. The purpose of the dam is to divert water into the west canal for the irrigation of lands on the west side of Langell Valley. The lower 3 miles of the west canal were constructed by contract. The upper 9 miles were being constructed by Government forces using a drag-line excavator. Contracts had been let for the construction of bridges, checks, and turnouts, and also for the hydraulic pumping plant for the Dry Lake area.

On June 18, the Langell Valley irrigation district executed a contract with the United States providing for the construction of the Gerber Reservoir and the irrigation of lands east of Lost River.

Operation data, Klamath project, by calendar years.

Item.	1917	1918	1919	1920	1921	1922
Acreage for which bureau was prepared to supply water	44,000	50,000	50,000	50,000	51,000	51,000
Acreage irrigated	33,635	38,269	42,881	44,880	44,883	[1] 44,929
Miles of canal operated	216	210	225	225	225	225
Water diverted (acre-feet)	66,368	104,926	119,850	114,179	106,104	119,830
Water delivered to land (acre-feet)	32,780	52,090	56,490	49,754	48,713	49,862
Per acre of land irrigated (acre-feet)	0.975	1.36	1.32	1.11	1.11	1.11

[1] Includes 8,929 acres of Van Brimmer land and in miscellaneous pumping divisions.

Settlement data, Klamath project.

Item.	1918	1919	1920	1921	1922
Total number of farms on project	560	570	570	570	570
Population	1,800	2,000	2,050	2,200	2,200
Number of irrigated farms	530	540	542	542	542
Operated by owners or managers	340	350	352	430	430
Operated by tenants	190	190	190	112	112
Population	1,510	1,600	1,650	1,720	1,720
Number of towns	4	5	5	5	5
Population	5,000	5,300	5,500	5,800	6,200
Total population, towns, and farms	6,800	7,300	7,550	8,000	8,400
Number of public schools	20	21	21	22	22
Number of churches	10	10	10	10	10
Number of banks	4	5	6	5	5
Total capital stock	$225,000	$500,000	$595,000	$545,000	$255,000
Amount of deposits	$2,383,000	$4,000,000	$4,500,000	$3,500,000	$3,500,000
Number of depositors	6,264	6,500	9,250	8,000	8,000

SOUTH DAKOTA, BELLE FOURCHE PROJECT.

B. E. Hayden, project manager, Newell, S. Dak.

The Belle Fourche project is located in western South Dakota, a little north and east of the Black Hills. The district is served by the Chicago & North Western Railway, which runs into the heart of the project, and the Burlington Railway, which runs into the Black Hills. The principal towns are Belle Fourche, Newell, Nisland, and Fruitdale. The source of water supply is the Belle Fourche River. The climate is semiarid, with an average annual rainfall of about 14 inches; the temperature ranges from −38° to 105° F. The character of the soils varies from light sandy loam to heavy clay, the clay soils predominating. The duty of water averages 1.5 acre-feet per acre. The principal products are alfalfa, wheat, oats, corn, potatoes, sugar beets, garden truck, and live stock, the chief markets for which are Omaha, Minneapolis, and Chicago.

The irrigation plan provides for the diversion of water from the Belle Fourche River by means of a dam about 1½ miles below Belle Fourche, S. Dak., and an inlet or supply canal about 6½ miles in length into a storage reservoir, controlled by the Belle Fourche Dam on Owl Creek, a tributary of the Belle Fourche River; the distribution of water from the inlet canal to a small area of land, and the distribution of water from the reservoir through two canal systems to lands on both sides of the Belle Fourche River.

SUMMARY OF DATA FOR BELLE FOURCHE PROJECT TO END OF FISCAL YEAR 1923.

Areas and crops:		
Irrigable acreage when project is complete		96,431
Public land entered to June 30, 1923	37,732	
Public land open to entry on June 30, 1923	117	
Public land withdrawn on June 30, 1923	12,008	
State land unsold on June 30, 1923	667	
Private land, June 30, 1923	45,907	
Acreage bureau could supply, season of 1922		82,190
Acreage irrigated, season of 1922		31,150
Acreage cropped under irrigation, season of 1922		56,928
Value of irrigated crops, season of 1922		$585,770
Value of irrigated crops per acre cropped		$10.28
Finances:		
Appropriations—		
Fiscal year 1923, amount of congressional authorizations	$335,958.79	
Disbursements and liabilities	58,574.06	
Unencumbered balance June 30, 1923		$277,384.73
Fiscal year 1924, amount specified in appropriation act		95,000.00

	Fiscal year 1923	To June 30, 1923
Irrigation works:		
Net construction cost	[1] $1,252.56	$3,567,437.13
Less water-right contracts—		
Project lands (76,511.93 acres)	[1] 20,568.70	2,595,606.99
Warren Act lands, (54.8 acres)		1,671.40
Total	[1] 20,568.70	2,597,278.39
Balance	19,316.14	970,158.74

	Calendar year 1922.	To Dec. 31, 1922.	Fiscal year 1923.	To June 30, 1923.
Net operation and maintenance cost	$55,685.88	$922,477.91	$56,378.71	$951,665.57
Less—				
Charges billed	98,866.84	871,172.72	98,745.18	870,863.27
Penalties	2,451.57	15,496.88	1,324.04	15,646.41
Discounts	[1] 1,210.11	[1] 12,127.41	[1] 372.15	[1] 12,310.87
Total	100,108.30	874,542.19	99,697.07	874,198.81
Balance	[1] 44,422.42	47,935.72	[1] 43,318.36	77,466.76

[1] Contra.

Summary of data for Belle Fourche project to end of fiscal year 1923—Continued.

	Reclamation fund.	Judgments, Court of Claims.	Increase of compensation (net).	Total.
Investment:				
Disbursements and net transfers	$4,530,758.17	$37,170.22	$45,650.63	$4,613,579.02
Less collections	1,078,483.76			1,078,483.76
Net investment June 30, 1923	3,452,274.41	37,170.22	45,650.63	3,535,095.20

[1] Contra.

Status of current accounts receivable as of June 30, 1923.

	Due.		Collected.			
			Cash.			
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.	Other credits to June 30, 1923.	Uncollected June 30, 1923.
To return net construction cost:						
Water-right charges	$117,996.04	$749,203.60	$14,747.62	$477,672.39	$219.15	$271,312.06
Charges paid in advance			[1] 19.52	388.36		
To return net operation and maintenance cost:						
Operation and maintenance charges, project lands (76,511.93 acres)	98,668.46	870,433.99	17,435.61	513,444.05	12,452.64	344,537.30
Warren Act lands (54.8 acres)	76.72	429.28		46.00		383.28
Total	98,745.18	870,863.27	17,435.61	513,490.05	12,452.64	344,920.58
Charges paid in advance			[1] 206.13	39.73		
Penalties and interest			1,269.53	15,557.84	88.57	
Revenues:						
Rentals of irrigating water	408.72	5,060.10	408.72	4,910.10		150.00
Rentals of grazing and farm lands	318.77	318.77	318.77	318.77		
Total	727.49	5,378.87	727.49	5,228.87		150.00
Miscellaneous uncollected						366.26
Other miscellaneous collections (reclamation fund)			3,545.54	66,106.52		
Grand total collections			37,500.14	1,078,483.76		

[1] Contra.

Uncollected construction water right charges as of June 30, 1923, 36.2 per cent of total accruals.
Uncollected operation and maintenance charges as of June 30, 1923, 39.6 per cent of total accruals.

ACTIVITIES DURING FISCAL YEAR.

Activities on the project during the year were confined to operation and maintenance of the completed system.

The crop season of 1922 experienced heavy precipitation during the growing period, which resulted in a small demand for water and a minimum area irrigated. Only about half of the land in crop received irrigation water. The growth and yield of crops were good, but on account of too much precipitation in June and July practically all of the first cutting of alfalfa was seriously damaged. Other crops harvested were satisfactory.

. Precipitation for the year was 16.1 inches, and for April, May, June, and July was 9.8 inches. The total flow of the Belle Fourche River was 369,681 acre-feet. Storage in the Belle Fourche Reservoir on June 30 was 176,900 acre-feet.

On May 12, 1922, a severe wind storm, blowing at the rate of 75 to 80 miles per hour, dislodged about 80 pavement blocks on the Belle Fourche Dam. Temporary repair was made by slipping timber curtains over the rupture and later permanent repair was made by backfilling and covering with a reinforced concrete slab. The parapet wall for a distance of 2,100 feet was being raised to prevent waves during heavy storms shooting over the top of the dam. At the close of the year 1,200 feet of this work had been completed.

The most important occurrence during the year was the formation of an irrigation district to take the place of the water users' association. It is expected that a contract providing for the payment in full by the district of costs incurred by the United States and granting certain relief in payments will be signed by the United States, the district, and the association.

Operation data, Belle Fourche project, by calendar years.

Item.	1918	1919	1920	1921	1922
Acreage for which bureau was prepared to supply water	82,592	82,634	82,430	83,328	82,190
Acreage irrigated	52,445	56,638	59,850	55,100	31,150
Miles of canal operated	612	615	615	615	615
Water diverted (acre-feet) from Belle Fourche River	194,364	121,293	101,113	86,791	115,629
Water delivered to farms (acre-feet)	51,731	82,409	36,616	71,715	28,421
Per acre of land irrigated (acre-feet)	0.99	1.46	0.61	1.3	1.09

Settlement data, Belle Fourche project.

Item.	1918	1919	1920	1921	1922
Total number of farms on project	1,292	1,292	1,292	1,292	1,292
Population	2,675	2,675	2,700	2,700	2,700
Number of irrigated farms	906	1,000	1,024	1,033	[1] 1,035
Operated by owners or managers	590	668	692	451	833
Operated by tenants	316	332	332	582	116
Population	2,424	2,597	2,650	2,510	2,213
Number of towns	5	5	5	5	5
Population	2,100	2,200	2,350	2,386	2,386
Total population in towns and on farms	4,775	4,875	5,050	5,086	5,086
Number of public schools	24	24	26	24	24
Number of churches	11	11	9	9	9
Number of banks	9	9	9	9	9
Total capital stock			$250,000	$250,000	$250,000
Amount of deposits	$2,391,262	$3,837,680	$2,657,621	$2,373,380	$2,606,200
Number of depositors			6,560		[2] 6,500

[1] 86 farms not operated.

[2] Estimated.

UTAH, STRAWBERRY VALLEY PROJECT.

W. L. WHITTEMORE, project manager, Provo, Utah.

The Strawberry Valley project is located in the north central part of Utah; the irrigable area lies along the southeastern shore of Utah Lake, in Utah County, and the storage works in Wasatch County, 30 miles east of Springville. The irrigation plan provides for the storage of water in Strawberry Reservoir, the carriage of these stored waters through Strawberry tunnel, approximately 4 miles long, into Diamond Fork, a tributary of the Spanish Fork River, and the diversion of water from this stream through canal systems to the irrigable area.

The length of the irrigation season is 169 days, from April 15 to September 30. The average elevation of the project lands is about 4,600 feet above sea level. The average rainfall at Payson for a period of 16 years is 18½ inches, most of which occurs from September 1 to May 1. The climate is temperate, varying from 95° F. in summer to 0° F. in winter. The last killing frost in the spring usually occurs prior to May 10 and the first in the fall after October 1. The soil varies from sandy loam to heavy clay and varying mixtures of both, with black alluvium and loam in the bottom lands. The mesa lands are sandy loam underlaid with gravel so that natural drainage is excellent. All soils are easily worked and extremely fertile if properly cultivated, and are suitable for raising any crop that will grow in the Temperate Zone. The principal crops are wheat, oats, barley, millet, alfalfa, timothy, sugar beets, potatoes, corn, cane, apples, plums, pears, peaches, prunes, apricots, cherries, melons, and all kinds of vegetables. The sugar beet, cereal, and hay crops constitute the staple crops under the project.

The project is traversed by two transcontinental railroad lines, the Denver & Rio Grande Western and the Los Angeles and Salt Lake (Union Pacific system). There is also a local electric interurban line connecting the main project towns with Salt Lake City and points in northern Utah.

SUMMARY OF DATA FOR STRAWBERRY VALLEY PROJECT TO END OF FISCAL YEAR 1923.

Areas and crops:		
Irrigable acreage when project is complete		55,389
Public land entered to June 30, 1923	1,953	
Private land, June 30, 1923	53,436	
Acreage bureau could supply, season of 1922		53,889
Acreage irrigated, season of 1922		[1] [2] 47,446
Acreage cropped under irrigation, season of 1922		[1] [3] 47,201
Value of irrigated crops, season of 1922		[1] [4] $1,426,339.00
Value of irrigated crops per acre cropped		[1] [5] $30.22
Finances:		
Appropriations—		
Fiscal year 1923, amount of congressional authorizations	$135,464.52	
Disbursements and liabilities	42,774.75	
Unencumbered balance, June 30, 1923		$92,689.77
Fiscal year 1924, amount specified in appropriation act		45,000.00

	Fiscal year, 1923.	To June 30, 1923.
Irrigation works:		
Net construction cost	[6] $5,493.80	$3,466,968.00
Less water-right contracts—		
Project lands (19,153 acres)	1,100.00	1,577,138.90
Warren Act lands (approximately 15,335 acres)		644,580.00
Other lands (approximately 12,958 acres)		862,380.47
Total (47,446 acres)	1,100.00	3,084,099.37
Balance	[6] 6,593.80	382,868.63

[1] Includes High Line and Spanish Fork divisions and Springville and Mapleton irrigation districts.
[2] Project lands, 32,500.
[3] Project lands, 31,201.
[4] Project lands, $904,839.
[5] Project lands, $29.
[6] Contra.

Summary of data for Strawberry Valley project to end of fiscal year 1923—Continued.

	Calendar year 1922.	To Dec. 31, 1922.	Fiscal year 1923.	To June 30, 1923.
Net operation and maintenance cost	$39,926.90	$341,502.04	$24,415.90	$352,254.65
Less:				
Charges billed or contracted	60,835.32	277,137.19	[1] 128,384.71	351,748.02
Penalties	1,411.31	2,242.15	1,280.82	2,789.25
Discounts	[2] 1,056.34	[2] 7,995.03	[2] 1,415.40	[2] 8,354.09
Total	61,190.29	271,384.31	128,250.13	346,183.18
Balance	[2] 21,263.39	70,117.73	[2] 103,834.23	6,071.47

	Reclamation fund.	Judgments, Court of Claims.	Increase of compensation (net).	Total.
Investment:				
Disbursements and net transfers	$4,155,102.04	$440.00	$31,198.58	$4,186,740.62
Less collections	1,128,320.75			1,128,320.75
Net investment, June 30, 1923	3,026,781.29	440.00	31,198.58	3,058,419.87

[1] Accrued, $54,625.28; deferred charges (tunnel repairs), $74,610.83; suspended, contra, $851.40.
[2] Contra.

Status of current accounts receivable as of June 30, 1923.

	Due.		Collected.			Uncollected June 30, 1923.
			Cash.		Other credits, June 30, 1923.	
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.		
To return net construction costs:						
Water-right charges	[1] $120,520.50	$476,345.47	$82,707.41	$396,396.76		$79,948.71
Charges paid in advance			128.06	186.12		
To return net operation and maintenance cost:						
Operation and maintenance charges, project lands (19,153 acres)	29,187.75	156,866.46	22,517.51	129,205.04	$4,948.27	22,713.15
Warren Act lands (approximately 15,335 acres)	[2] 8,592.91	37,391.91	12,678.39	36,361.26	696.15	334.50
Other lands (approximately 12,958 acres)	15,993.22	82,878.82	14,249.12	75,419.97	2,709.67	4,749.18
Total (47,446 acres)	53,773.88	277,137.19	49,445.02	240,986.27	8,354.09	27,796.83
Charges paid in advance			.04	.04		
Penalties and interest			1,280.82	2,789.25		
Revenues:						
Rentals of irrigating water		8,388.39		8,388.39		
Rentals of power and light	23,961.48	127,048.89	23,741.72	125,210.42		1,838.47
Rentals of grazing and farming lands	15,250.50	135,781.16	15,250.50	135,781.16		
Total	39,211.98	271,218.44	38,992.22	269,379.97		1,838.47
Miscellaneous uncollected						76.34
Other miscellaneous collections (Reclamation fund)			5,669.04	218,582.34		
Grand total collections			178,222.61	1,128,320.75		

[1] Accruals for the year	$123,079.33
Less adjustments	2,558.83
Net	120,520.50
[2] Accruals for the year	$9,444.31
Less adjustments	851.40
Net	8,592.91

Uncollected construction water-right charges as of June 30, 1923, 16.8 per cent of total accruals.
Uncollected operation and maintenance charges as of June 30, 1923, 10 per cent of total accruals.

ACTIVITIES DURING FISCAL YEAR.

All activities during the year were confined to routine operation and maintenance work in connection with measurement and delivery of irrigation waters in bulk to the several divisions of the project. The water supply of the project was ample for all purposes. Strawberry Reservoir was filled just prior to the beginning of the fiscal year and again at its close. Indications at the close of the year pointed to an abundant harvest in all crops. Financial conditions were much improved, with a general feeling of optimism prevailing among the water users.

The project power plant and transmission lines were in continuous operation, delivering under contract 1,177,993 kilowatt hours to the several project towns and lighting companies. New Woodward governors for controlling the two 500 k. v. a. generators were purchased but not installed.

Spanish Fork diversion dam and power canal were operated without difficulty. The canal was cleaned prior to the beginning of the present irrigation season, and extensive repairs and enlargements were made to the upper plunge basin at the power plant during November, 1922.

Operation data, Strawberry Valley project, by calendar years.

Item.	1917	1918	1919	1920	1921	1922
Acreage for which bureau was prepared to supply water	30,000	34,000	45,000	50,000	53,889	53,889
Acreage irrigated	28,147	32,539	[1] 44,300	[1] 45,450	[1] 47,446	[1] 47,446
Miles of canal operated	9.3	9.3	9.3	9.3	9.3	9.3
Water diverted (acre-feet)	61,300	55,242	70,467	69,100	[2] 83,000	79,500
Water delivered to land (acre-feet)	51,750	46,250	59,125	57,900	71,200	73,401
Per acre of land irrigated (acre-feet)	1.84	1.42	1.33	1.27	1.50	1.55

[1] Includes High Line, Spanish Fork, and Springville-Mapleton divisions.
[2] 14,000 acre-feet of free water distributed.

Settlement data, Strawberry Valley project.

Item.	1920	1921	1922
Total number of farms on project	3,000	3,200	3,200
Population	7,000	7,000	7,000
Number of irrigated farms	2,700	2,740	2,741
Operated by owners or managers	2,200	2,340	2,291
Operated by tenants	500	400	450
Population	6,500	6,500	6,500
Number of towns	12	12	12
Population	16,000	16,000	16,000
Total population of towns and farms	23,000	23,000	23,000
Number of public schools	22	22	23
Number of churches	23	23	25
Number of banks	6	6	6
Total capital stock	$285,000	$285,000	$285,000
Total amount of deposits	$2,180,000	$1,750,000	$1,900,000
Total number of depositors	9,830	10,000	10,000

WASHINGTON, OKANOGAN PROJECT.

CALVIN CASTEEL, project manager, Okanogan, Wash.

The Okanogan project is located in Okanogan County, Wash., on a branch line of the Great Northern Railway running from Wenatchee to Oroville, Wash. Towns on the project are Okanogan, Omak and Riverside. The source of water supply is Salmon Creek with storage in Conconully and Salmon Lake Reservoirs. Water is pumped from Okanogan River by the Robinson Flat pumping plant, from Duck Lake by the Duck Lake pumping plant, and from two Government wells to supplement the flow of gravity water from Conconully and Salmon Lake Reservoirs. A pumping plant is also operated at the Salmon Lake Reservoir during dry years which pumps water from Salmon Lake below the elevation at which water can be secured by gravity flow.

The length of the irrigation season is 153 days, from May 1 to September 30. The average elevation is 1,000 feet above sea level; the average rainfall is about 11.5 inches; the temperature ranges from 108° F. to −10° F. The soil is volcanic ash and gravel on the upper benches and sand and gravel on the lowlands along the Okanogan River. The principal crop of the project is apples, with some peaches, pears, small fruits, hay, and vegetables. The principal markets are the States east. The duty of water is 2½ acre-feet per acre per annum at the farm.

SUMMARY OF DATA FOR OKANOGAN PROJECT TO END OF FISCAL YEAR 1923.

Areas and crops:		
Irrigable acreage when project is complete		7,676
Public land entered to June 30, 1923	116	
Private land, June 30, 1923	7,560	
Acreage bureau could supply, season of 1923		7,676
Acreage irrigated, season of 1922		5,570
Acreage cropped under irrigation, season of 1922		4,834
Value of irrigated crops, season of 1922		$1,607,140
Value of irrigated crops per acre cropped		$332.45
Finances:		
Appropriations—		
Fiscal year 1923, amount of congressional authorizations	$67,085.15	
Disbursements and liabilities	57,189.73	
Unencumbered balance June 30, 1923		$9,895.42
Fiscal year, 1924, amount specified in appropriation act		65,000.00

	Fiscal year 1923.	To June 30, 1923.
Irrigation works:		
Net construction cost	[1] $4,317.26	$1,393,740.41
Less: Water-right contracts—		
Project lands (6,466 acres)	[1] 4,424.00	[1] 1,498,579.29
Balance	106.74	[1] 104,838.88

	Calendar year 1922.	To Dec. 31, 1922.	Fiscal year 1923.	To June 30, 1923.
Net operation and maintenance cost	[1] [2] $39,911.49	$265,594.79	$43,535.09	$287,633.34
Less:				
Charges billed or contracted	54,829.30	258,341.24	54,914.80	258,341.24
Penalties	1,914.77	5,713.85	1,037.67	6,192.60
Discounts	[1] 3.00	[1] 359.03		[1] 359.03
Total	56,741.07	263,696.06	55,952.47	264,174.81
Balance	[1] 96,652.56	1,898.73	[1] 12,417.38	23,458.53

[1] Contra.

[2] Transferred to supplemental construction	$81,831.97
Net cost for the year	41,920.48
Net (contra)	39,911.49

Summary of data for Okanogan project to end of fiscal year 1923—Continued.

	Reclamation fund.	Increase of compensation (net).	Total.
Disbursements and net transfers	$1,783,504.46	$45,128.79	$1,828,633.25
Less collections	424,130.57		424,130.57
Net investment June 30, 1923	1,359,373.89	45,128.79	1,404,502.68

Status of current accounts receivable as of June 30, 1923.

	Due.		Collected.			Uncollected June 30, 1923.
			Cash.		Other credits to June 30, 1923.	
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.		
To return net construction cost:						
Water-right charges	[1] $5,483.55	$56,191.73	$13,154.51	$54,281.38		$1,913.35
Charges paid in advance			[2] 11.87	146.32		
To return net operation and maintenance cost:						
Operating and maintenance charges (project lands, 6,701 acres)	35,991.50	220,967.53	48,844.75	214,634.33	$2,614.61	3,718.59
Penalties and interest			1,001.76	5,614.24	578.36	
Revenues:						
Rentals of irrigation water	474.58	110,450.85	362.40	106,222.69	2,584.19	1,643.97
Rentals of power and light		1,754.71		1,754.71		
Rentals of grazing and farming lands	50.00	722.50	50.00	722.50		
Total	524.58	112,928.06	412.40	108,699.90	2,584.19	1,643.97
Miscellaneous uncollected						1,136.14
Other miscellaneous collections (reclamation fund)			19,342.38	40,754.40		
Grand total collections			82,743.93	424,130.57		

[1] Amount due fiscal year 1923 ..... $12,608.86
Less adjustment account erroneous amount reported previously 7,125.31
Net 5,483.55

[2] Contra.
Uncollected construction water-right charges as of June 30, 1923, 3.1 per cent of total accruals.
Uncollected operation and maintenance charges as of June 30, 1923, 1.7 per cent of total accruals.

ACTIVITIES DURING FISCAL YEAR.

One mile of transmission line was erected and electric motors and equipment were purchased to operate five private wells for pumping irrigation water to be used in lieu of gravity water. Three wells had been completed and it was expected that the other two would be finished soon.

In each of the 1922 and 1923 seasons enough water was available to deliver about 2 acre-feet per acre, about 3,000 acre-feet of which were pumped from below the gate sill of Salmon Lake Reservoir. An early spring and heavy rains during the first half of June, 1923, made the water supply much larger than was anticipated. In addition to the oil engine pumping at Salmon Lake, electrical pumps at Robinson Flat, Duck Lake, and the Government wells augmented

the flow of gravity water from Conconully Reservoir. Three private wells also were operated to replace gravity water during the greater part of the irrigation seasons within the fiscal year.

Operation data, Okanogan project, by calendar years.

Item.	1918	1919	1920	1921	1922
Acreage for which the bureau was prepared to supply water	10,099	10,099	8,200	8,200	7,676
Acreage irrigated	6,402	5,849	5,440	5,650	5,570
Miles of canal operated	79	79	79	79	79
Water diverted (acre-feet)	8,827	13,837	8,435	21,866	21,318
Water delivered to land (acre-feet)	6,339	9,967	5,259	16,706	15,295
Per acre of land irrigated (acre-feet)	0.99	1.70	0.96	2.96	2.75

Settlement data, Okanogan project.

Item.	1918	1919	1920	1921	1922
Total number of farms on project	594	594	594	439	447
Population	1,162	1,147	1,150	1,220	1,363
Number of irrigated farms	401	407	400	439	445
Operated by owners	378	361	350	388	388
Operated by tenants	23	46	50	51	57
Population	1,162	1,147	1,150	1,220	1,363
Number of towns	3	3	3	3	3
Population	1,400	1,520	1,885	2,150	2,300
Total population in towns and on farms	2,562	2,667	3,035	3,370	3,663
Number of public schools	7	7	5	6	6
Number of churches	8	8	8	8	8
Number of banks	4	5	5	5	5
Total capital stock	$135,000	$160,000	$155,000	$155,000	$155,000
Amount of deposits	$500,000	$600,000	$1,050,100	$1,043,000	$956,000
Number of depositors	1,750	1,800	2,100	2,200	2,250

WASHINGTON, YAKIMA PROJECT.

J. L. LYTEL, project manager, Yakima, Wash.

The Yakima project, comprising the Sunnyside, Tieton, Kittitas, Moxee, Roza, and Kennewick divisions, is located in Kittitas, Yakima, and Benton Counties, Wash. The water supply comes from the Yakima River and its tributaries, supplemented by storage in Keechelus, Kachess, Cle Elum, Bumping, Tieton, and Clear Creek Reservoirs. Sunnyside division diverts water from the east side of the Yakima River at Union Gap for the irrigation of 107,600 acres and Tieton division from the Tieton River, about 15 miles above its mouth, for 32,000 acres. The project plan provides for the ultimate irrigation of 70,287 acres in the Kittitas division with diversion from the Yakima River at Easton, 58,350 acres in the Roza division diverting from the Yakima River about 10 miles above Yakima, 35,000 acres in the Kennewick division diverting from the Yakima River at Prosser, and 36,750 acres in the Moxee division with diversion from the Tieton River about 5 miles above its mouth. The Wapato Indian project, now being constructed by the United States Indian Service, diverts water from the west side of the Yakima River at Union Gap, for the irrigation of 120,000 acres on the Yakima Indian Reservation.

The irrigation season on the Sunnyside division extends from April 1 to October 31 (214 days) and on the Tieton from April 20 to September 30 (164 days). The water duty on the Sunnyside division is 3 acre-feet per acre, and on the Tieton division 2.4 acre-feet per acre. The soil is volcanic ash, sandy loam, and decomposed basalt. The principal products are alfalfa, apples, pears, peaches, grains, potatoes, sugar beets, hops, stock, and dairy products.

Transportation is furnished by the Northern Pacific, Union Pacific, and Chicago, Milwaukee & St. Paul Railways.

SUMMARY OF DATA FOR YAKIMA PROJECT TO END OF FISCAL YEAR 1923.

Areas and crops:		
Irrigable acreage when project is complete		339,987
Public land entered to June 30, 1923	7,358	
Public land withdrawn on June 30, 1923	13,688	
State land unsold on June 30, 1923	5,939	
Indian land, June 30, 1923	241	
Railroad land unsold on June 30, 1923	21,729	
Other private land, June 30, 1923	291,032	
Acreage bureau could supply, season 1922		133,339
Acreage irrigated, season of 1922		123,700
Acreage cropped under irrigation, season 1922		107,161
Value of irrigated crops, season of 1922		$8,838,750
Value of irrigated crops per acre cropped		$82.49
Finances:		
Appropriations—		
Fiscal year 1923, amount of congressional authorizations	$1,589,298.02	
Disbursements and liabilities	1,385,265.87	
Unencumbered balance June 30, 1923		$204,032.15
Fiscal year 1924, amount specified in appropriation act		1,310,000.00

	Fiscal year 1923.	To June 30, 1923.
Irrigation works:		
Net construction cost	$1,233,778.73	$12,239,239.57
Less—		
Funds advanced and unapplied credits	500.00	63,736.50
Water-right contracts—		
Project lands (132,250 acres)	62,142.05	7,191,940.24
Warren Act lands (approximately 114,912 acres)	53,300.00	2,457,232.00
Total	115,942.05	9,712,908.74
Balance	1,117,836.68	2,526,330.83

	Calendar year 1922.	To Dec. 31, 1922.	Fiscal year 1923.	To June 30, 1923.
Net operation and maintenance cost	$230,173.02	$2,103,493.42	$234,364.05	$2,223,579.28
Less—				
Charges billed or contracted	252,979.19	2,131,650.39	265,917.99	2,204,765.88
Penalties	6,869.28	31,042.16	5,581.09	34,692.94
Discounts	[1] 6,237.07	[1] 25,942.68	[1] 3,410.35	[1] 28,025.28
Total	253,611.40	2,136,749.87	268,088.73	2,211,433.54
Balance	[1] 23,438.38	[1] 33,256.45	[1] 33,724.68	12,145.74

[1] Contra.

Summary of data for Yakima project to end of fiscal year 1923—Continued.

	Reclamation fund.	Judgments Court of Claims.	Increase of composition (net).	Total.
Investment:				
Disbursements and net transfers	$15,171,120.50	$71,999.46	$254,331.83	$15,497,451.79
Less collections	6,018,561.23			6,018,561.23
Net investment June 30, 1923	9,152,559.27	71,999.46	254,331.83	9,478,890.56

Status of current accounts receivable as of June 30, 1923.

	Due.		Collected.			Uncollected June 30, 1923.
			Cash.		Other credits to June 30, 1923.	
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.		
To return net construction cost:						
Funds advanced and unapplied credits	$500.00	$63,736.50	$500.00	$63,736.50		
Water-right charges	382,998.40	3,285,300.25	335,919.84	3,075,731.13	$28,715.95	$180,853.17
Total	383,498.40	3,349,036.75	336,419.84	3,139,467.63	28,715.95	180,853.17
Charges paid in advance			[1] 198.06	3,391.54		
To return net operation and maintenance cost:						
Operation and maintenance charges project lands (approximately 132,250 acres)	239,900.49	2,095,617.38	226,876.72	1,948,630.52	29,070.62	117,916.24
Warren Act lands (approximately 114,912 acres)	26,017.50	109,148.50	32,148.50	109,148.50		
Total	265,917.99	2,204,765.88	259,025.22	2,057,779.02	29,070.62	117,916.24
Charges paid in advance			26.40	169.79		
Penalties and interest			5,581.09	34,692.94		
Revenues:						
Rentals of irrigation water	4,151.29	140,588.96	4,277.38	139,974.13		614.83
Rentals of power and light		3,635.33		3,635.33		
Rentals of grazing and farming lands	1,741.73	21,280.04	1,729.73	21,034.74		245.30
Total	5,893.02	165,504.33	6,007.11	164,644.20		860.13
Miscellaneous uncollected						1,194.72
Other miscellaneous collections (reclamation fund)			50,156.89	618,416.11		
Grand total collections			657,018.49	6,018,561.23		

[1] Contra.

Uncollected construction water-right charges as of June 30, 1923. 5.5 per cent of total accruals.
Uncollected operation and maintenance charges as of June 30, 1923, 0.53 per cent of total accruals.

ACTIVITIES DURING FISCAL YEAR.

STORAGE.

At the end of the fiscal year the construction of Tieton Dam was more than half completed. The work for the year was largely a continuation of the features previously started, namely, clearing and stripping the dam site, placing earth and rock embankment, excavating for the corewall and placing concrete, excavation for the spillway and for the gate chamber in the outlet tunnel.

The principal new work undertaken was the reservoir clearing which was carried on both by Government force and by small contractors. Seven hundred and thirty thousand cubic yards of earth embankment, 130,000 cubic yards of rock embankment, 165,000 cubic yards of spillway excavation, 8,100 cubic yards of concrete, and

1,075 acres of reservoir clearing were the principal results accomplished during the year.

Operation of storage reservoirs.—The storage reservoirs at Lakes Keechelus, Kachess, CleElum, and Bumping were operated continuously from July 1 to October 12, 414,802 acre-feet having been released for irrigation purposes, leaving only 44,504 acre-feet holdover. The run-off of the Yakima River at Union Gap totaled 2,280,000 acre-feet, which, with the exception of 1915 and 1920, is the lowest of record.

SUNNYSIDE DIVISION.

A siphon and lateral system to water 1,600 acres under the Granger irrigation district was constructed during the latter half of the fiscal year. The main siphon, which is 33 inches inside diameter and about 14,000 feet long, is built of reinforced concrete lock-joint pipe, manufactured on the project, and extends from the Sunnyside main canal at Mile 23.10 to a point near the town of Granger. The siphon and lateral system include 15,860 feet of 33-inch pipe, maximum head 135 feet; 340 feet of 24-inch pipe; 1,000 feet of 18-inch pipe, maximum head 30 feet; 4.3 miles of earth laterals and 1.1 miles of lined laterals; and 2 miles of 6-inch, 8-inch, and 10-inch distribution pipe.

Operation of the Sunnyside Canal system continued from July 1 to October 31, 1922. A maximum diversion of 1,300 second-feet was maintained from July 6 to August 2. The irrigation season of 1923 began on April 1.

Maintenance work consisted chiefly of removal of silt, moss, and weeds, and miscellaneous repairs to canals and structures. Exceptional items were the side lining with gravel of about 2 miles of the main canal and 1¼ miles of branch canals, construction of two concrete chute drops on Snipes laterals 10.21 and 10.61, and the painting of several large wooden siphons. One hundred concrete and 97 wooden structures were built.

Operation data, Sunnyside division, Yakima project, by calendar years.

Item.	1917	1918	1919	1920	1921	1922
Acreage for which the bureau was prepared to supply water	97,285	98,537	100,130	100,733	101,509	101,339
Acreage irrigated	80,500	84,650	90,000	93,610	94,500	95,000
Number of farms irrigated	2,720	2,780	2,810	2,905	3,065	.....
Miles of canal operated	590	590	605	605	605	605
Water diverted (acre-feet)	385,179	415,097	421,364	417,522	440,348	421,950
Water diverted to land (acre-feet)	254,280	290,402	295,215	284,800	309,709	301,838
Per acre of land irrigated (acre-feet)	3.159	3.430	3.270	3.040	3.28	3.18

Settlement data, Sunnyside division, Yakima project.

Item.	1918	1919	1920	1921	1922
Total number of farms on project	2,780	2,810	2,905	3,065	3,138
Population	8,744	9,477	10,929	12,080	12,332
Number of irrigated farms	2,780	2,810	2,905	3,065	3,138
Operated by owners or managers	1,983	2,009	2,272	2,322	2,375
Operated by tenants	797	801	633	743	763
Population	8,744	9,477	10,929	12,080	12,332
Number of towns	13	13	11	11	11
Population	5,975	7,650	6,941	6,941	7,250
Total population of towns and on farms	14,719	17,127	17,870	19,021	19,582
Number of public schools	37	37	40	41	41
Number of churches	30	30	30	30	30
Number of banks	10	13	13	13	12
Total capital stock	$275,000	$400,000	$380,000	$397,000	[1] $400,000
Total amount of deposits	$2,642,851	$4,388,610	$2,695,848	$2,914,608	[1] $3,000,000
Total number of depositors	7,936	11,182	11,556	11,643	[1] 12,000

[1] Estimated.

TIETON DIVISION.

Diversion of water from the Tieton River continued from July 1 to October 3, 1922, the storage supply of Clear Creek Reservoir being exhausted on the latter date. The irrigation season of 1923 began on April 21.

Maintenance work included cleaning of weeds, willows, and silt from 335 miles of canals and laterals, comprising the entire distribution system down to each farm unit, as well as repair and replacement of measuring-box structures. Betterment work on the sublateral system involved the erection of 2,700 linear feet of wood-stave flume, installation of 4¼ miles of pipe lines, and the placing of approximately 100 cubic yards of concrete in turnout and division structures.

Operation data, Tieton division, Yakima project, by calendar years.

Item.	1917	1918	1919	1920	1921	1922
Acreage for which bureau was prepared to supply water	31,000	31,000	32,000	32,000	32,000	32,000
Acreage irrigated	25,400	26,400	27,000	28,000	28,500	28,700
Miles of canal operated	335	335	335	335	335	335
Water diverted (acre-feet)	80,377	90,280	98,223	96,506	100,844	93,754
Water served to land (acre-feet)	57,318	64,068	70,776	69,471	71,148	71,105
Per acre of land irrigated (acre-feet)	2.26	2.43	2.62	2.47	2.50	2.48

Settlement data, Tieton division, Yakima project.

Item.	1917	1918	1919	1920	1921	1922
Total number of farms on project	1,400	1,400	1,480	1,480	1,480	1,480
Population	2,150	2,150	2,850	3,314	3,457	3,542
Number of irrigated farms	1,190	1,280	1,253	1,340	1,300	1,300
Operated by owners or managers	726	820	903	1,048	1,010	965
Operated by tenants	464	460	350	292	290	335
Population	2,150	2,150	2,850	3,314	3,457	3,542
Number of towns	7	8	8	8	8	8
Population	20,500	21,850	23,000	23,000	23,000	23,000
Total population of towns and on farms	22,650	24,000	25,850	26,314	26,457	26,542
Number of public schools	10	10	10	10	10	10
Number of churches	3	3	3	3	4	4

CROPS AND DEVELOPMENT.

The crop yield for the season of 1922 was, on the whole, satisfactory, but the returns were disappointing owing, in large measure to marketing conditions, and a number of the water users were unable to pay their water-right charges in December. However, at the close of the fiscal year 1923 a good showing had been made in collections and a feeling of optimism and hope for the future prevailed. One of the best cherry crops in a number of years had been harvested and sold at a profitable price, and prospects never were better for a bumper crop of apples and other fruit.

WYOMING, RIVERTON PROJECT.

H. D. Comstock, project manager, Riverton, Wyo.

The Riverton project lies in Fremont County, Wyo., northeast of Wind River and west of the Big Horn River. Adjacent towns on the Chicago & North Western Railway are Riverton and Shoshoni with estimated populations of 2,000 and 500. The source of water supply is Wind River. The irrigation season is from May 1 to September 30. The average altitude is 5,200 feet; the average annual rainfall is about 8 inches; the average maximum temperature is about 95° F.; and the avearge minimum temperature—27° F. The soil is a heavy loam. The principal products are alfalfa, cereals, sugar beets, potatoes; and the principal markets, Omaha, Denver, and local. The estimated duty of water is 2 acre-feet per acre per annum at the farm.

The flood waters of Wind River, Bull Lake Creek, and Dinwoody Creek will be stored in Pilot Butte, Bull Lake, and Dinwoody Reservoirs. The waters of Wind River will be diverted into the Wyoming Canal, serving the entire project.

SUMMARY OF DATA FOR RIVERTON PROJECT TO END OF FISCAL YEAR 1923.

Areas:		
Irrigable acreage when project is complete		100,000
Public land withdrawn on June 30, 1923	69,000	
Indian land, June 30, 1923	1,000	
Private land, June 30, 1923	30,000	
Finances:		
Appropriations—		
Fiscal year 1923, amount of congressional authorizations	$948,194.55	
Disbursements and liabilities	665,938.22	
Unencumbered balance June 30, 1923		$282,256.33
Fiscal year 1924 amount specified in appropriation act		600,000.00

	Fiscal year 1923.	To June 30, 1923.
Irrigation works, net construction cost	$425,820.45	$1,060,228.09

	Reclamation fund.	Wind River Indian.	Increase of compensation (net).	Total.
Investment,:				
Disbursements and net transfers	$936,972.87	$360,161.69	$34,562.45	$1,331,697.01
Less collections	26,493.37	985.65		27,479.02
Net investment June 30, 1923	910,479.50	359,176.04	34,562.45	1,304,217.99

Status of current accounts receivable as of June 30, 1923.

	Collected—Cash.		Uncollected, June 30, 1923.
	Fiscal year 1923.	To June 30, 1923.	
Miscellaneous uncollected			$16,153.35
Other miscellaneous collections (reclamation fund)	$7,449.65	$24,493.37	
Wind River Indian miscellaneous collections	.19	985.65	
Grand total collections	7,449.84	25,479.02	

ACTIVITIES DURING FISCAL YEAR.

The Wind River diversion dam was completed in May, 1923, except the bridge and some work on the gates. The work during the year involved about 28,000 cubic yards of excavation and 8,500 cubic yards of backfill, the placing of 13,650 cubic yards of concrete, 50,000 cubic yards of embankment, 7,500 cubic yards of riprap, and 209,000 pounds of gates and machinery.

At the Pilot Butte Reservoir the excavation for the outlet was done by dragline, amounting to 63,000 cubic yards.

On the Wyoming Canal work was begun on the structures on the first 10 miles, including lining, and 1,900 cubic yards of concrete were placed.

Settlement data, Riverton project.

Item.	1919	1920	1921	1922
Number of towns	2	2	2	2
Population	2,500	2,500	[1] 2,500	[1] 2,500
Number of public schools	2	2	2	2
Number of churches	7	7	7	7
Number of banks	5	5	5	5
Total capital stock	$110,000	$135,000	$135,000	$135,000
Amount of deposits	$1,200,000	$1,500,000	[1] $900,000	[1] $1,000,000
Number of depositors	2,700	2,600	[1] 2,200	[1] 2,200

[1] Estimated.

WYOMING, SHOSHONE PROJECT.

J. S. Longwell, project manager, Powell, Wyo.

The Shoshone project is located principally in Park and Big Horn Counties, Wyo., with a small area in Carbon County, Mont., and consists of the Garland, Frannie, Willwood, and Heart Mountain divisions. Irrigation works have been constructed which provide for the delivery of water to approximately 71,000 acres in the Garland and Frannie divisions, and work is under way to provide for the irrigation of some 17,600 acres in the Willwood division. Water is obtained for these lands from the Shoshone River and storage is provided in the Shoshone reservoir, created by the Shoshone Dam located 8 miles west of Cody, Wyo., to supplement direct flow rights from the river.

The irrigation plan contemplates three diversions from the river. The first diversion, that for the proposed Heart Mountain division, will be located at the Shoshone Dam. No work has been undertaken on this feature except the surveys and a short outlet tunnel at Shoshone Dam. The second diversion, which has been in operation since 1908, is located at the Corbett Dam on the Shoshone River 16 miles below the Shoshone Dam, for the irrigation of lands in the Garland and Frannie divisions. The third diversion is to be effected by the Willwood Dam on the same stream, 8 miles below the Corbett Dam. The dam has been practically completed and work is under way on the construction of the canals and laterals to provide water for the lands of the Willwood division on the south side of the Shoshone River.

The annual rainfall on the project lands averages 5.5 inches and the average elevation of these lands is about 4,500 feet above sea level. Temperature records over the period of record show a mean maximum of 98.1° F. and a mean minimum of −19.7° F. The principal agricultural products on the developed part of the project are alfalfa, wheat, oats, potatoes, and sugar beets. On the Garland and Frannie divisions the amount of water delivered to the farms has averaged 2.29 acre-feet per acre irrigated. Transportation facilities are provided by the Chicago, Burlington & Quincy Railroad, and the principal markets are Billings and Butte, Mont.; Casper, Wyo.; Omaha, Nebr.; and Kansas City, Mo. The principal project towns are Powell, Deaver, and Frannie, Wyo.

SUMMARY OF DATA FOR SHOSHONE PROJECT TO END OF FISCAL YEAR 1923.

Areas and crops:		
Irrigable acreage when project is complete		139,000
Public land entered to June 30, 1923	63,265	
Public land open to entry on June 30, 1923	1,816	
Public land withdrawn on June 30, 1923	60,573	
State land unsold on June 30, 1923	5,399	
Railroad land unsold on June 30, 1923	987	
Other private land, June 30, 1923	6,960	
Acreage bureau could supply, season of 1922		71,223
Acreage irrigated, season of 1922		42,870
Acreage cropped under irrigation, season of 1922		41,907
Value of irrigated crops, season of 1922		$788,125
Value of irrigated crops per acre cropped		$18.81
Finances:		
Appropriations—		
Fiscal year 1923, amount of congressional authorizations	$1,023,767.63	
Disbursements and liabilities	923,005.79	
Unencumbered balance June 30, 1923		$100,761.84
Fiscal year 1924, amount specified in appropriation act		925,000.00

	Fiscal year 1923.	To June 30, 1923.
Irrigation works:		
Net construction cost	$811,155.85	$3,291,013.17
Less—		
Funds advanced and unapplied credits		1,000.00
Water-right contracts, project lands (66,005.73 acres)	691,335.37	5,590,539.43
Total	691,335.37	5,591,539.43
Balance	119,820.48	2,699,473.74

Summary of data for Shoshone project to end of fiscal year 1923—Continued.

	Calendar year 1922.	To Dec. 31, 1922.	Fiscal year 1923.	To June 30, 1923
Net operation and maintenance cost	$58,431.13	$586,357.43	$58,835.72	$616,200.16
Less:				
Charges billed or contracted	73,544.72	609,507.67	72,290.93	608,112.93
Penalties	2,442.19	7,440.56	3,018.11	8,862.54
Discounts	[1] 1,799.23	[1] 9,785.74	[1] 509.50	[1] 9,865.56
Total	74,187.68	607,162.49	74,799.54	607,109.91
Balance	[1] 15,756.55	[1] 20,805.06	[1] 15,963.82	9,090.25

	Reclamation fund.	Judgments Court of Claims.	Increase of compensation (net).	Total.
Investment:				
Disbursements and net transfers	$9,016,606.06	$322,164.67	$146,839.24	$9,485,609.97
Less collections	1,271,764.92			1,271,764.92
Net investment, June 30, 1923	7,744,841.14	322,164,67	146,839.24	8,213,845.05

[1] Contra.

Status of current accounts receivable as of June 30, 1923.

	Due.		Collected.			Uncollected June 30, 1923.
			Cash.		Other credits to June 30, 1923.	
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.		
To return net construction cost:						
Funds advanced and unapplied credits		$1,000.60		$1,600.00		
Water-right charges	$116,358.22	801,203.36	$27,573.40	609,898.05	$518.67	$190,786.64
Total	116,358.22	802,203.36	27,573.40	610,898.05	518.67	190,786.64
Charges paid in advance			[1] 200.35	191.78		
To return net operation and maintenance cost:						
Operation and maintenance charges, project lands (66,005.73 acres)	72,290.93	608,112.93	23,913.68	405,060.65	14,648.86	188,403.42
Charges paid in advance			71.56	268.57	3.83	
Penalties and interest			1,201.11	7,045.54	1,817.00	
Revenues:						
Rentals of irrigation water	847.28	12,366.05	1,063.31	12,113.90		252.15
Rentals of power and light	5,710.01	6,522.71	5,531.10	6,025.20		497.51
Rentals of grazing and farming lands	1,198.02	8,468.34	1,142.27	8,107.34		361.00
Total	7,755.31	27,357.10	7,736.68	26,246.44		1,110.66
Miscellaneous uncollected						10,056.34
Other miscellaneous collections (Reclamation fund)			19,714.58	222,053.89		
Grand total collections			80,010.66	1,271,764.92		

[1] Contra.

Uncollected construction water-right charges as of June 30, 1923, 23.7 per cent of total accruals.
Uncollected operation and maintenance charges as of June 30, 1923, 30.9 per cent of total accruals.

ACTIVITIES DURING FISCAL YEAR.

Power system.—The construction of the Shoshone power plant at the Shoshone dam was completed during the fore part of the year and a 36-inch balanced needle valve was installed at the lower end of the by-pass pipe discharging into the river below the power plant. This valve is used for the control of the reservoir discharge at all times when the river flow is less than 400 second-feet.

Willwood division.—The Willwood diversion dam had been practically completed and the first mile of the Willwood Canal, which is in heavy rock excavation, was under construction during the year. A 150-foot span steel bridge across the Shoshone River south of the town of Powell to give access to the irrigable land of this division was constructed in cooperation with Park County.

Garland division.—Drainage construction under supplemental agreements was carried on during the entire year of 1922 with three drag-line excavators and during 1923 with the same drag-line equipment and one trenching machine additional. Work during 1923 was done with funds from a supplemental construction charge of $11 per acre announced by public notice of April 28, 1923. There were 14.8 miles of open drains and 3.25 miles of closed drains constructed.

Frannie division.—Drainage work was also carried on in this division under a supplemental construction agreement. Four drag-line excavators were employed, constructing 30.02 miles of open drains. Two thousand eight hundred twenty-eight linear feet of the Deaver Canal were lined with gunite to prevent seepage.

Operation data, Shoshone project, by calendar years.

Item.	1917	1918	1919	1920	1921	1922
Acreage for which bureau is prepared to furnish water	43,265	55,296	56,119	65,890	65,826	71,223
Acreage irrigated	32,984	38,282	41,641	45,650	45,420	42,870
Miles of canal operated	286	381	415	458	460	457
Water diverted (acre-feet)	128,629	162,463	199,061	187,329	221,419	192,851
Water delivered to land (acre-feet)	68,730	84,378	117,459	113,065	112,324	99,710
Per acre of land irrigated (acre-feet)	2.10	2.29	2.81	2.50	2.47	2.33

Settlement data, Shoshone project.

Item.	1917	1918	1919	1920	1921	1922
Total number of farms on project	646	830	823	1,009	1,005	1,083
Population	1,941	2,320	2,481	2,730	2,686	2,444
Number of irrigated farms	621	750	803	910	935	914
Operated by owners or managers	467	616	619	695	646	696
Operated by tenants	154	134	184	215	289	218
Population	1,941	2,320	2,481	2,730	2,686	2,444
Number of towns	4	5	5	5	5	5
Population	1,082	1,170	1,395	1,345	1,541	1,585
Total population on farms and in towns	3,023	3,490	3,876	4,075	4,227	4,029
Number of public schools	8	10	11	12	7	7
Number of churches	7	8	8	8	8	8
Number of banks	3	5	5	6	5	4
Total capital stock	$60,000	$75,000	$110,000	$125,000	$110,000	$100,000
Amount of deposits	$488,000	$654,000	$955,000	$644,000	$543,000	$441,000
Number of depositors	1,500	1,875	2,500	2,605	2,400	2,400

SECONDARY PROJECTS.

COOPERATIVE INVESTIGATIONS AND PROPOSED PROJECT EXTENSIONS.

NOTE.—A description of secondary projects and investigations carried on under cooperative contracts will be found in previous annual reports with complete references on pages 393 to 453 of the twentieth, and pages 119 to 133 of the twenty-first annual reports. The following discussions are limited to these projects and investigations on which work was done during the fiscal year ending June 30, 1923.

ARIZONA.

BOULDER CANYON RESERVOIR INVESTIGATIONS.

Field surveys and office studies for comparisons of various dam sites under investigation were continued. A geological examination of the reservoir and dam sites below the Virgin River was made by Dr. F. L. Ransome, of the Geological Survey, who reported favorably in all instances. Capt. H. A. C. Jenison, of the Geological Survey, partially completed a valuation survey of mineral deposits in the reservoir site. Investigations were made of construction materials in the vicinity of the dam sites.

A river gaging station was established and has been maintained on the Colorado River in Boulder Canyon since January 1.

Field surveys and diamond-drill investigations were completed. At the upper dam site in Boulder Canyon the maximum depth to bedrock varies from 90 feet below water surface under the upstream toe of the proposed dam to 158 feet under the downstream toe. The rock is quartz diorite and a fine grained granite, both of excellent quality, although considerably jointed. At the lower site in Black Canyon the corresponding depths are from 110 feet to 130 feet. The rock is of volcanic origin, excellent in quality and termed andesite tuff buccia by Doctor Ransome. A hole drilled into the foundation rock to a depth of 557 feet below low-water surface did not penetrate other formation. The investigations indicate that Black Canyon is the more favorable location for the dam, although a reservoir with dam in either canyon is feasible.

COLORADO RIVER DIVERSIONS.

Investigations were in progress to determine the feasibility of irrigating certain lands in Arizona from the Colorado River and to ascertain to what extent this might be economically done. This work was carried on by the State under supervision of a commission composed of Mr. E. C. LaRue, representing the Geological Survey; Mr. H. E. Turner, representing the State of Arizona; and Mr. Porter J. Preston, representing the Bureau of Reclamation. Available funds would permit only a general reconnaissance. Surveys were commenced by

field party in September, 1922, and continued until May, 1923. These covered the investigation of possible diversions to lands lying along and adjacent to the Colorado River from Boulder Canyon south. Investigations were also carried on to ascertain if it was feasible to divert above Boulder Canyon, carry the water by tunnel and canal through certain mountain passes, and place it upon large areas of land lying further back from the river.

Surveys were made to ascertain the elevation of certain controlling passes. A portion of the territory covered is at some distance from that covered by any former surveys, and it was therefore necessary to run long lines in order to obtain definite elevations at many of the controlling points. The lands possible of reclamation were viewed and a rough reconnaissance made of a large territory, embracing lands both north and south of the Gila River and as far south as the Mexican boundary.

COLORADO RIVER TRIBUTARIES.

An examination of storage possibilities on the Little Colorado River for lands near Winslow, Ariz., on the Virgin River for lands near Littlefield, Ariz., and on the Bill Williams River has been in progress since March, 1923. No development of any considerable size is possible without extensive storage and all available sites are expensive and complicated by the heavy silt burden of the flood flow of the streams from which the reservoirs can be filled. Thorough search of all drainage basins was made for suitable reservoir sites.

CALIFORNIA.

IMPERIAL VALLEY PROJECT.

(See also Arizona, Boulder Canyon investigations.)

The Colorado River Commission, after holding hearings in all States affected, formulated the Colorado River pact at Santa Fe, N. Mex., in November, 1922, which has since been ratified by all States in the Colorado River Basin except Arizona. In general, this pact formally allocates the waters of the Colorado River Basin between the upper and lower States.

SHASTA VALLEY PROJECT.

The investigation of this project under the cooperative agreement was completed and the report dated April, 1923, approved on May 21, 1923. An area of about 22,800 acres is irrigated in Shasta Valley at the present time. Additional areas of irrigable land in the valley that could be reached by diversion from Klamath River near Keno, Oreg., are estimated at 65,000 acres. The land is nearly all in private ownership and about 38 per cent is in cultivation by dry farming. The irrigation plan is so inseparably involved with power development that the cost for irrigation alone can not be estimated on present information. Any diversion of water for irrigation would result in reduced power possibilities from water of Klamath River between Keno and Willow Creek, and also would involve power rights of the California-Oregon Power Co., both at their existing plants and in

relation to their prospective developments. Whether the irrigation project is feasible will depend upon the terms of such an agreement as can be reached with the power company, since without large financial credits from power developed along the irrigation canals the project is too costly to be feasible at present.

STONY GORGE EXTENSION OF THE ORLAND PROJECT.

Millsite division.—Investigations regarding development of the Millsite Reservoir site to 120,500 acre-feet capacity for the purpose of insuring the Orland project against a serious water shortage during extreme drought seasons were concluded during the year. These consist of completion of diamond drilling, water-supply study, and preparation of report dated November, 1922.

The water-supply study embodied in a special report dated February, 1923, but not formally approved, states that an extension of 19,500 acres to the present project area, resulting in an enlarged project of 40,000 acres, is the most feasible plan for insuring the additional water supply. The shareholders of the Orland Unit Water Users' Association, however, at the annual meeting held in February, 1923, declined to accept the necessary increased charge, which is estimated at $67.50 per acre in addition to the present building charge of $55.

The study also indicates that whereas the water supply of Millsite Reservoir as applied to a separate division of 25,000 acres is sufficient to meet the irrigation requirements in most of the 21 years included in the study, it would be grossly deficient during the several drought years of record.

COLORADO.

ORCHARD MESA PROJECT.

This area has been combined with that of the Grand Valley project and arrangement perfected for delivery of water from the project main canal, in connection with which a concrete siphon was constructed across the Colorado River and reconstruction of canals and structures begun. This will be reported hereafter as part of the Grand Valley project.

IDAHO.

BOISE PROJECT EXTENSION, BLACK CANYON DIVISION.

The Black Canyon division comprises an area of 56,000 acres, exclusive of lands watered by the Notus Canal. This extension is located between the Boise and the Payette Rivers in Canyon and Gem Counties, Idaho. Under date of November 8, 1921, a contract was executed by the United States and the Emmett irrigation district, which irrigates lands in Payette Valley, providing for the construction of a diversion dam at Black Rock Canyon. It is planned for this dam to divert on both sides of the Payette River. On the north side water will be pumped by direct-connected pumps to supply the present canal of the Emmett irrigation district. The canal on the south side will be supplied by gravity. Water may be diverted on the south side to supply the Black Canyon lands of 56,000 acres. In July, 1922, work preparatory to construction of the

dam was begun, which consisted of the completion of a wagon road, the building of a power line, the erection of a construction camp, and the building of a railroad siding with warehouses. No surveys were made or other investigation carried on in connection with the irrigable area or water supply of the Black Canyon lands during the year. The dam on the Payette River is under construction for the Emmett irrigation district and will be reported hereafter as part of the Boise project.

DUBOIS PROJECT.

In connection with this investigation a survey run from the Egin Dam on the North Fork of the Snake River at St. Anthony, west to the proposed irrigable area, confirmed the fact that a large area of land could be reached by a diversion from this point, though the canal, on account of its flat grade through lava fields, would be rather expensive. Another survey from the Consolidated feeder heading just below Heise on the South Fork of Snake River to the Egin Dam at St. Anthony on the North Fork developed the fact that water from the South Fork, including Jackson Lake storage, could be utilized on the Dubois tract in addition to that available from the North Fork.

To reduce the cost of the main canal by increasing the velocity and decreasing the section, surveys were made for a canal system on a steep grade through the lava fields to the irrigable area, including a 6-mile tunnel under Big Bend Ridge connecting the proposed Island Park Reservoir, where the storage of the North Fork water would be possible.

Water-supply studies upon which the area of the project is to be based are being made in conjunction with studies of the entire Snake River drainage area. The indications are that the irrigable area of the project will be found to be nearer 150,000 than 350,000 acres, as was originally claimed. Through the failure of the finance association to advance the amount of funds agreed upon, the work was discontinued prior to completion.

MOUNTAIN HOME PROJECT.

Under contract with the Boise Chamber of Commerce dated May 12, 1921, detailed topography was taken along 20 miles of the roughest portion of the country to be crossed by the main canal from the Snake River, this section being between Black Canyon north of Gooding and Little Canyon Creek north of Glenns Ferry. Paper locations of canal and structures were then made and another fly line run from a point near the abandoned Jerome Reservoir to Black Canyon to connect the 1918 survey with what appeared to be the best location through the most difficult country. Preliminary designs and estimates have been made of some of the most important structures, and water-supply studies are being made to determine the amount of water that may be made available from Snake River. Although these studies are not complete, the indications are that there will be an insufficient water supply to irrigate all the available land, and it will probably be necessary to investigate an additional source of supply from the Salmon, Payette, and Boise Rivers before determining upon the feasibility of this project.

AMERICAN FALLS RESERVOIR.

A number of the present canal systems under private and district management requiring storage to complete their irrigation supply have completed plans for cooperation in the construction of this reservoir. Advance payments have been made by two irrigation districts and three others, one of which embraces five old canal companies irrigating some 400,000 acres have signed agreements. Contract was made with the Idaho Power Co. which eliminates the conflicting rights of this company at American Falls.

A large investment has been made in real estate required for flowage, including the greater portion of the old town of American Falls. A new townsite has been laid out on higher ground for future development.

This will be reported hereafter as part of the Minidoka project.

NEBRASKA.

LOWER PLATTE PROJECT.

The investigations on the Lower Platte project, under cooperative contract with the Lower Platte Irrigation Association, were carried to completion and report issued dated February, 1923. This project contemplates the diversion of water from the Platte River, with storage in several inland reservoirs, for the irrigation of lands in private holdings in Lincoln, Dawson, and Buffalo Counties, embracing a total acreage of 297,000 acres under proposed canals and supplying storage water for 120,000 acres additional under private canals.

The report outlines eight schemes of development from the smallest practical unit to an ultimate complete development, with varying estimated costs per acre. Drainage investigations were carried on, borings being made over the low-lying lands, below present operated private canals. The results of this work show that approximately 35,000 acres of land are in need of drainage relief.

A review of the report was made by a board of engineers and submitted under date of March 9, 1923.

TRI-COUNTY PROJECT.

The Tri-County project is located in the south-central part of Nebraska, on the level table-lands between the Platte and Republican Rivers, in the counties of Gasper, Phelps, Kearney, and Adams.

The area of the project, as tentatively outlined for investigation, embraces 500,000 acres. The area which ultimately will be recommended for the project will depend on the available amount of water that can be secured from the Platte River and the required duty of water being experimentally determined by the Department of Agriculture.

Senate Joint Resolution 215, passed in September, 1922, authorized the Secretary of the Interior to make an investigation of this project upon advance of the necessary funds by the Central Nebraska Supplemental Water Association. The association accordingly advanced $5,000 and by cooperation with the State of Nebraska $2,000 additional was secured for this work.

Field work was commenced in November, 1922, with three location parties, and continued until the 1st of February. Main canals with an aggregate length of 225 miles were surveyed and 19,420 acres of detail topography taken at the proposed storage sites in the Plum Creek Basin and along the supply canal. Two reservoir sites were surveyed, having an aggregate storage capacity of 504,000 acre-feet.

From funds also advanced by the association, the United States Department of Agriculture, assisted by the agricultural department of the University of Nebraska, is engaged in making investigations and experiments to determine the water-holding capacity of the subsoil to decide the feasibility of subsoil storage and the amount of water that will have to be thus applied to supplement the deficiency in rainfall.

NEVADA.

COLORADO RIVER TRIBUTARIES.

An examination of three tributaries of the Colorado River—the Virgin in Utah, Arizona, and Nevada, and the Williams and Little Colorado in Arizona—to determine the possibility of further irrigation on these streams, was begun in March, 1923.

No development is possible without storage and storage is complicated by the heavy silt burden of the streams. Thorough search of the drainage basins was made for possible reservoir sites.

Twelve years' records on the Virgin indicate a dependable unused supply for storage of over 100,000 acre-feet. Storage sites are all of limited capacity and steep gradient. The climate is fine and portions of the available land are highly productive and would bear comparatively heavy construction charges.

Surveys are being made to determine the probable cost of storage and distribution.

NEW MEXICO.

CARLSBAD EXTENSION-PECOS RIVER INVESTIGATIONS.

Final report was completed by N. H. Darton, of the Geological Survey, on the No. 3 dam and reservoir site with respect to foundation for the dam and the probability of leakage within permissible limits. Soil surveys were concluded by A. T. Strahorn, of the Bureau of Soils, on the Carlsbad extensions and the Fort Sumner areas. The lands south of the present project were found to be largely of inferior character owing mostly to the presence of gypsum. Lands to the west of the present project were found to contain a net area of 22,000 acres of irrigable land of good character. Final report on the investigations was rendered in May, 1923, and approved. In view of the conflicting opinions regarding the water-retentive qualities of the No. 3 reservoir site, and the experience gained at the McMillan and Hondo sites, the water-supply and cost estimates are based on the utilization of the safer Alamogordo site. For a total irrigated area of 57,000 acres, consisting of 25,000 acres of Carlsbad project lands, 10,000 acres of Fort Sumner project lands, and 22,000 acres of new lands west of the present Carlsbad project, the required capacity of the Alamogordo Reservoir was determined to be 135,000

acre-feet with the canal systems at Carlsbad extensively lined. For these new lands a canal would divert from Pecos River 1½ miles below McMillan Reservoir, parallel the present main canal on an 85-foot higher elevation, and end at Black River. This canal would be very costly owing to difficult location, a large percentage of classified material, a tunnel 2,300 feet long and numerous siphons or flumes. Alternative diversion at the No. 3 dam site was found even more expensive.

MIDDLE RIO GRANDE PROJECT.

Investigation of this project was completed and the report dated March, 1923, was approved on April 13, 1923.

The report submits plans and estimates of cost of canal systems, drainage and river bank protection, and for storage. This storage must be provided to regulate the annual flow as needed, to hold over from high to low years for the use of the middle valley project, and to make up the loss to Elephant Butte reservoir which might otherwise occasionally occur, owing to the operation of this project. Two reservoir sites were studied in this connection, one being on the Rio Grande a few miles north of the Colorado-New Mexico State line and the other on the Chama River in New Mexico.

PENASCO RIVER INVESTIGATIONS.

Irrigation has been carried on in the vicinity of Hope, N. Mex., for about 25 years, by diverting the normal flow of the Penasco River continuously throughout the year. The lands are very productive, commercial orchards giving very profitable yields where the water supply is sufficient for irrigation.

In the second annual report of the Bureau of Reclamation are found a map and a description of preliminary surveys of four reservoir sites made in 1903 on Eagle Draw and Penasco River, all of which were considered infeasible. Early in 1923 an allotment of $5,000 was made by the Secretary of the Interior for further investigations of this project. Since April a reconnaissance has been made from Dayton, N. Mex., to Trails End, a distance of 80 miles. Topography has also been taken on two newly discovered prospective reservoir sites. Automatic gages have been maintained at both sites, but so far the run-off has been insufficient to make flood storage dependable for any increase in irrigated area. At one of these sites, however, it may be found feasible to store the winter run-off for use during the dry months of May and June, which will give a more reliable water supply for lands now under cultivation. Investigations are still in progress.

OREGON.

BAKER PROJECT.

Under date of April, 1922, a formal report on surveys and estimates of the Baker project was issued as a result of the previous season's investigations. In this report two possible dam sites for Thief Valley Reservoir are proposed, site No. 1, at the lower end of Thief Valley, providing a capacity of 130,000 acre-feet, and site No. 2,

3 miles further down the canyon, providing a capacity of 146,000 acre-feet. Site No. 2 is preferred in this report and testing the foundation is recommended. A project of 30,000 acres of new lands and 7,500 acres of supplemental supply lands is proposed.

Under date of July 3, 1922, a board report was issued reviewing the report of April, 1922. In this report it was recommended that tests of dam site No. 2 and more detailed surveys and estimates of the north and south canals and the lateral system be made; and also that negotiations be begun with the Oregon-Washington Railroad & Navigation Co. and the State highway commission for the removal of their roads from the reservoir site.

In August, 1922, a geological report on the two dam sites was written by Mr. A. C. Spencer of the Geological Survey, in which he recommended both sites as feasible.

The work recommended in the board report of July 3, 1922, was carried out during the summer and fall of 1922. The testing of dam site No. 2 by diamond drill and tunneling was completed in November, and under date of November 18, 1922, a board report was written in which it was recommended that dam site No. 2 be abandoned on account of unfavorable foundation conditions, and that testing of site No. 1 be undertaken; also that on account of the elimination of nonirrigable lands the project be reduced to 24,000 acres needing full supply, 2,000 acres needing partial storage and full canal capacity, and 4000 acres needing partial storage and no canal capacity. Dam site No. 1 was accordingly tested by diamond drill and test pits, with especially favorable results, the greatest depth to bedrock being 10 feet below low-water surface and the rock being very hard and tight. This drilling was completed in January, 1923.

Under date of January 20, 1923, a board report was issued based upon further investigation and estimates. In this report it was concluded that the net acreage of the project should be as recommended in the board report of November 18, 1922 (see above); that the required available reservoir capacity is 95,000 acre-feet; that dam site No. 1 should be adopted (required depth of water at dam, 115 feet); that the main canal (length 9½ miles) should head in the storage dam. It is recommended by the board that the project be given favorable consideration on the following conditions; (*a*) That satisfactory contract be secured for repayment of the cost; (*b*) that the railroad relocation be made without cost to the project; (*c*) that settlement with the old Carey Act company be made as estimated in the report; (*d*) and that the reservoir right of way be secured within the appraisal.

An agreement was secured from the State highway commission to remove the highway from the reservoir site without cost to the project (estimated cost $25,000); and a verbal agreement was secured from the president of the Union Pacific Railwoad Co. to pay one-half of the cost of removing the railroad from the reservoir site (total estimated cost $420,000).

The investigation of the Baker project was completed in May, 1923, and the equipment and organization were transferred to other projects.

M'KAY STORAGE, UMATILLA PROJECT EXTENSION.

The construction of the McKay Reservoir to furnish supplemental water for 30,000 acres of land to the south of the present Umatilla project was approved and contracts are now pending with the Westland and Stanfield irrigation districts for repayment of the cost.

On account of exorbitant prices asked for lands required for the dam construction the work was delayed pending outcome of three suits in condemnation required to secure possession of these lands. Favorable results were attained and possession was expected early in July.

The reservoir is located on McKay Creek, about 8 miles south of Pendleton, Oreg.

This will be reported hereafter as part of the Umatilla project.

MALHEUR PROJECT.

The Warmsprings irrigation district has constructed an irrigation system from the Malheur River covering about 32,000 acres near Vale, Malheur County. The Warmsprings storage reservoir, located 60 miles above Vale, on the Malheur River, has a capacity of 170,000 acre-feet, about one-half of which is surplus. Under date of August 26, 1922, a contract was entered into with the Warmsprings irrigation district and the State of Oregon providing that the United States should investigate possible extensions at a cost not to exceed $10,000. During the fall of 1922 surveys were made of canal location covering tracts of land on both sides of the river, the line on the north side extending to Dead Ox Flat. The point of diversion from the river was taken 1 mile west of Namorf Station, which permits covering the flat in the vicinity of Harper. The total length of canal line run was 104 miles. The gross area covered by this survey amounted to 86,000 acres. Studies were made of the results of this work, together with that of previous years, including the water supply of the drainage area. A preliminary report was submitted under date of January, 1923. In May, 1923, a soil survey was begun under direction of the Department of Agriculture covering the various tracts under this investigation.

OREGON-CALIFORNIA.

KLAMATH PROJECT, PUMPING DIVISION.

The lands included in the Pumping division have a total area of about 20,000 acres. There are 14 separate areas adjacent to project canals varying in size from about 200 to 4,000 acres. The proposed lifts are from 25 to 70 feet. All the lands are in private ownership. During the past year the Malin irrigation district, the Shasta View irrigation district, and the Sunnyside irrigation district executed contracts with the United States for a water supply. The area pledged by the three contracts is about 9,000 acres. Pumping and distribution works are to be constructed by the districts.

KLAMATH PROJECT, LOWER KLAMATH LAKE DIVISION.

There are about 76,000 acres gross of marsh lands in this division, 27,000 acres being in Oregon within the boundaries of the Klamath

drainage district and 49,000 acres being in California. The Klamath drainage district has contracted for a water right from the United States and is proceeding to construct its own drainage and irrigation system. The ownership of a large portion of the marsh lands in California is in doubt. The area involved is claimed by both the State and the United States. It will take court action to determine the ownership.

LANGELL VALLEY PROJECT.

A canal and distribution system for lands in the Langell Valley and Horsefly irrigation districts, on the west side of Lost Creek, have been under construction during the year. These lands will secure their water supply from Clear Lake Reservoir, already constructed, in connection with the Klamath project.

The district is also negotiating a contract for the construction of the Gerber, heretofore known as the Horsefly Reservoir, on Miller Creek, and a distribution system for some 8,600 acres on the east side of Lost River. Investigations on these features, completed during the year, show favorable results.

These operations will hereafter be reported as part of the Klamath project.

OREGON-WASHINGTON.

UMATILLA RAPIDS PROJECT.

For the investigation of the Umatilla Rapids project, the second session of the Sixty-seventh Congress appropriated a special fund of $50,000. The work proposed will consist of the investigation of possible power development at the Umatilla Rapids on the Columbia River and the uses to which the power developed can be put. Preliminary investigations indicate the possibility of developing about 125,000 horsepower during the entire year, which can be put to commercial uses, and the additional development of about 250,000 horsepower during the summer season, which can be utilized for pumping irrigation water on lands in Oregon and Washington.

At the close of the fiscal year the work performed consisted of office studies and the topographic mapping of the marginal lands adjacent to the dam site and back-water pool.

TEXAS.

LOWER RIO GRANDE PROJECT.

The preliminary examination of flood conditions in Hidalgo, Cameron, and Willacy Counties, Tex., initiated by the contract of November 29, 1920, between the Bureau of Reclamation and the Rio Grande Valley Chamber of Commerce, was completed early in 1923, under contracts with the associated water improvement districts of Cameron and Hidalgo Counties and the Lower Rio Grande Water Users' Association dated June 24 and August 15, 1922, respectively.

The report of this investigation gives accounts of past floods, with a discussion of the probable losses that would have resulted from them if all the valley had been in cultivation, and a tentative plan for flood control, estimates of cost, and the value of the benefits to

be expected from the construction of protection works. Numerous maps, photographs, and other exhibits are included in the report.

On account of the limited capacity of the river channel and the fact that the Rio Grande is an international stream, most of the flood flow must be diverted from the river at the upper end of the valley without building any dams or other regulating works that will conflict with present treaty provisions.

Briefly, the scheme outlined contemplates taking a maximum of 130,000 second-feet into a wide floodway formed by levees extending from the head of Sardinas Resaca to the marsh lands bordering Laguna Madre, a distance of some 75 miles. At the lower end of Llano Grande Lake, 34 miles from the intake, provision is made for diverting the flow in excess of 100,000 second-feet from the floodway into Arroyo Colorado.

To provide against overflows from the river, a dike some distance from, and, in a general way, paralleling the Rio Grande, is to be built from the head of the main floodway to Brownsville.

As near as can be determined at this time, the net area to be protected is approximately 340,800 acres. Work was completed and the field office at McAllen, Tex., was closed on April 5, 1923.

RED BLUFF RESERVOIR.

Drilling at the dam site indicated the presence of gypsum in large quantities at shallow depths. Numerous outcrops of gypsum have been noted in the reservoir site, those along Delaware River being the most massive. Large sink holes exist in the upper part of the reservoir site. Indications point to the probable existence of large and continuous beds of gypsum and cavernous limestone which would carry water around the dam site if a storage reservoir were constructed. A final report by the Geological Survey awaits funds for additional work needed for its completion.

UTAH.

SALT LAKE BASIN INVESTIGATIONS.

The investigations were continued during the fiscal year. On September 1, 1922, a supplemental contract was entered into between the United States and the State of Utah providing additional funds and extending the scope of the work. The Weber River division report was completed in December, 1922. On March 31, 1923, a board of engineers consisting of the assistant chief engineer and the designing engineer of the bureau and the State engineer of Utah met at Salt Lake City and recommended that additional work be done to ascertain the possibility of using Bear River water on part of the area now tributary to the Weber River. This work is in progress.

In May, 1923, the Utah Lake division report was completed. On June 4, 1923, a board of engineers reviewed this report and suggested that additional information be obtained as to agricultural possibilities of the areas located west of Salt Lake City and south of Provo, Utah. The balance of the investigation, with the exception of the Tooele Valley, was given favorable recommendation for early construction, when the landowners to be benefited have completed arrangements for repayment of cost.

The field investigations have covered the area in the Salt Lake Basin from the Tooele Valley to the north line of Weber County. The same will be extended to cover the area adjacent to the Bear River below Collinston, Utah, and lands in Cache Valley irrigated by tributaries of the Bear River. The Magpie dam site on the Ogden River and the Chalk Creek dam site on the stream of that name will be tested by drilling, preliminary to early construction if the landowners to be benefited agree to repayment of the cost as required by the reclamation act.

SPANISH FORK-LEHI DRAINAGE INVESTIGATIONS.

One hundred observation holes were bored along the eastern shore of Utah Lake in the vicinities of Lehi, American Fork, Spanish Fork, and Lake Shore for studying and investigating the groundwater conditions therein and for determining the boundaries of lands needing drainage and those affected by the fluctuations of the surface of Utah Lake.

INTERMOUNTAIN DIVERSIONS FROM THE COLORADO RIVER BASIN.

An examination into the water supply and construction features where it is possible to divert water for irrigation from Colorado River Basin into Salt Lake Basin was in progress.

A preliminary study of the water supply of the following six possible projects which had been suggested by local interests was completed on May 18, and field investigation of each was begun.

Middle and Black Forks of Green River to Bear River.

North Fork of Duchesne River and West Fork of Rock Creek to Provo River.

Upper Price River (Fish Creek) to San Pitch River.

Headwaters of Cottonwood and Ferron Creeks (San Rafael Basin) to San Pitch River.

Fish Lake to Otter Creek in Sevier River Basin.

Duck Lake to Asay Creek or Coal Creek in Sevier River Basin.

The Reconnaissance of the Duck Lake and Fish Lake projects was completed on June 15, and reports were submitted June 27.

It is found that all the water of Duck Lake can be diverted to either Asay Creek or Coal Creek, both in the Sevier River Basin or to the Virgin River Basin. Satisfactory information as to the water supply is, however, not available.

Any surplus of water over irrigation demands in Fremont Basin can be diverted from Fish Lake and Seven Mile Creek into Otter Creek, a tributary of Sevier River, for use on undeveloped lands in Grass Valley, near the town of Koosharem. There is at present insufficient information as to the amount of this surplus water, but it is estimated to be between 5,000 and 10,000 acre-feet. It is estimated that 10,000 acre feet could, if available, be diverted at a cost of $20 to $30 per acre foot.

CASTLE PEAK PROJECT.

Runoff records for securing water supply data were continued.

LOWER WHITE RIVER INVESTIGATIONS.

This project would irrigate lands in Colorado as well as Utah. The contract dated September 1, 1922, between the United States

and the State of Utah provided for a cooperative investigation of the Lower White River project located between the Yampa and White Rivers. A field party determined the irrigable acreage and "backed" a canal location from the governing elevation of the area to an intersection with the White River, near Meeker, Colo. This possible canal location traverses some very rough mountainous land requiring a large amount of tunnelling and concrete bench fluming. A preliminary report on the possibility of irrigation from the White River, completed in May, 1923, shows that the cost would be very high and the project infeasible under present conditions. The investigation is being continued to ascertain if a project water supply could be secured more economically by diversion from the Yampa River at the Juniper Canyon dam site.

PRICE RIVER PROJECT.

All work on this project was postponed pending the success of a proposed bond sale by an irrigation district at Price, Utah, which if successful would result in the construction of the reservoir on Fish Creek, requiring the larger part of the available water supply. The irrigable area in this valley is largely in excess of the area possible to irrigate with the water supply available, even if storage is provided for all the flood flow.

WASHINGTON.

COLUMBIA BASIN PROJECT.

This project was surveyed by the State of Washington in 1919 and 1920. The irrigable area as found by the State survey is 1,753,000 acres and the cost of the project was estimated at $300,475,678. The land lies in central Washington east of the Columbia River. Further investigations were provided for by acts of Congress of February 21 and March 4, 1923, making a special appropriation of $100,000 for this purpose. An office was established at Spokane, Wash., and men were assigned to this work from the Bureau of Reclamation, the Geological Survey, and the Bureau of Soils. At the end of the fiscal year field work was in progress on soil surveys, geological examinations, test borings, and other surveys. A progress report is to be made in December, 1923, and the complete report in 1924.

COLUMBIA RIVER POWER INVESTIGATIONS.

A study of the Columbia River from Flathead Lake to Pasco, Wash., was commenced in the fall of 1921, by a board consisting of Col. J. B. Cavanaugh, United States Army; D. C. Henny, consulting engineer, Bureau of Reclamation; and F. F. Henshaw, district engineer, Geological Survey, Portland, Oreg., representing departments of the Federal Government; and C. S. Heidel, State engineer of Montana; W. G. Swendsen, State commissioner of reclamation for Idaho; and Marvin Chase, supervisor of hydraulics for the State of Washington, representing the three States affected. The object was to formulate plans for power development best adapted to a comprehensive scheme of improvement and utilization.

The study was completed on June 30, 1922, when a report was rendered to the Federal Power Commission, which was published with letter of transmittal of O. C. Merrill, executive secretary, dated February 17, 1923. The report was signed by all members of the board, with the exception of Marvin Chase, who presented a minority report. The conclusions of the majority report favor fullest irrigation development in the three States concerned, refer to the Columbia Basin Project as the most important single future user of Columbia River water, and recommend dedication of Flathead Lake to the use of Montana power under certain restrictions, and Pend Oreille and Priest Lakes to the Columbia Basin project if supplied by gravity, and to power in Washington if the basin project is supplied by pumping.

The majority report further shows that at known dam sites between Flathead Lake and Pasco the all-year effective horsepower which can be developed with Columbia Basin project supplied by gravity is 1,796,000, and with the project supplied by pumping 2,443,000, the latter additional to the seasonal power required for irrigation pumping.

YAKIMA PROJECT EXTENSIONS.

Proposed extensions to the Yakima project include four divisions, as follows, on which surveys and estimates have been made:

Roza division.—A board of engineers, consisting of J. L. Savage, James Munn, F. T. Crowe, and J. L. Lytel, reviewed the plans and estimates for the Roza division, their conclusions being contained in board report of October 6, 1922. The plans and estimates for the irrigation of 58,350 acres were approved on November 10, 1922.

Kittitas division.—Plans and estimates for the irrigation of 70,000 acres in the Kittitas division were made by an engineer employed by the district. His report of June 1, 1922, was forwarded to the chief engineer, through the Yakima project office, on September 16, 1922. A board of engineers, consisting of James Munn, J. L. Savage, and J. L. Lytel, went over the proposed works on the ground on October 8 and 9, 1922, and concluded that the hydraulic features and important structures should be carefully checked by the Bureau of Reclamation before final decision could be given on the report of the district. During the winter of 1922–23 the district engineer prepared construction plans and specifications with a view to proceeding with construction through the sale of district bonds. The district was, however, unsuccessful in its attempt to dispose of the bonds on account of a slump in the bond market.

Kennewick division.—The Kennewick irrigation district (Kennewick division) purchased a considerable portion of the right of way required for the main power canal, and acquired rights and property at Prosser Dam, through condemnation suit. Court decree in this suit was dated September 18, 1922. The irrigable area is 35,000 acres.

Moxee division.—Surveys were completed for the irrigation of 36,750 acres and the report dated June 29, 1921, was approved on January 11, 1922.

All these divisions have made provision for the necessary water supply for irrigation through Warren Act contracts with the United States, but the cost of reclamation in each case is higher than heretofore considered feasible.

WYOMING.

ALCOVA-CASPER PROJECT.

A soil survey and irrigable area classification was completed by Mr. A. T. Strahorn, of the Department of Agriculture, during the past year and the report, which was issued in the fall of 1922, shows the tract to contain large areas of land which, on account of adverse soil, drainage, or topographic conditions, were unsuitable for irrigation; and of the 88,742 acres designated as possible to irrigate, only 52,363 acres were found to be first class and 36,379 acres were shown as second class.

The estimated costs as given in the report of February, 1922, were based on an assumed irrigable area of 100,000 acres; and the results of the soil survey which decrease the available irrigable area quite materially, increase the estimated per acre cost and make the project's feasibility even more questionable.

Finanacial data for secondary project investigations.

BAKER.

Appropriations:	
Fiscal year 1923, amount of congressional authorizations	$363,541.37
Disbursements and liabilities	49,253.72
Unencumbered balance June 30, 1923	314,287.65
Fiscal year 1924, amount specified in appropriation act	None.

OTHERS.

Appropriations:	
Fiscal year 1923, amount of congressional authorizations	$329,010.48
Disbursements and liabilities	223,632.09
Unencumbered balance June 30, 1923	105,378.39
Fiscal year 1924, amount specified in appropriation act	200,000.00

	Baker.[1]		Deschutes.		Other investigations.[2]		Total.	
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.
Net cost of investigations	$36,750.07	$53,439.09	[3] $25.43	$8,360.96	$210,638.73	$1,940,156.78	$247,363.37	$2,001,956.83
Less funds advanced	[3]10,000.00	5,000.00	.....	.....	67,356.37	458,491.99	57,356.37	463,491.99
Balance	46,750.07	48,439.09	[3] 25.43	8,360.96	143,282.36	1,481,664.79	190,007.00	1,538,464.84
Investment to date:								
Reclamation fund—								
Disbursements and net transfers	.....	49,043.02	.....	894.85	.....	1,910,377.75	.....	1,960,315.62
Less collections	.....	675.74	.....	.15	.....	574,352.75	.....	575,028.64
Net investment	.....	48,367.28	.....	894.70	.....	1,336,025.00	.....	1,385,286.98
Increase of compensation (net)	.....	1,356.95	.....	43.01	.....	33,926.80	.....	35,326.76
Investment, all funds	.....	49,724.23	.....	937.71	.....	1,369,951.80	.....	1,420,613.74

[1] Previously included with "Other investigations."
[2] Includes Imperial Valley.
[3] Contra.

Status of current accounts receivable as of June 30, 1923.

	Due.		Collected.			
			Cash.		Other credits to June 30, 1923.	Uncollected.
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.		
To apply on net cost of investigations:						
Funds advanced—						
Baker	$10,000.00	$5,000.00	.....	$5,000.00	.....	.....
Other secondary investigations	67,356.37	458,491.99	$57,970.58	425,147.70	.....	$33,344.29
Revenues:						
Rentals of grazing and farming lands—						
Deschutes	.....	7,407.29	.....	.....	$7,407.29	.....
Other secondary investigations	12,728.05	146,614.88	11,923.23	110,065.77	35,090.38	1,458.73
Other collections:						
Baker	.....	.....	675.74	675.74	.....	.....
Deschutes	.....	.....	.....	.15	.....	.....
Other secondary investigations	.....	.....	17,827.03	34,139.28	.....	299.25
Grand total collections	.....	.....	88,396.58	575,028.64	.....	.....

Statement showing costs of secondary project investigations and funds contributed for these investigations.

Features.	Cost, fiscal year 1923.	Total to June 30, 1923.	Contributed funds.
Arizona:			
Arizona well drilling	[1] $466.70	$3,069.63	$1,446.01
Arizona cooperative	[1] 1.50	20,295.17	13,714.42
Colorado River diversions	1,723.43	1,723.43	.....
Parker	.....	517.91	.....
San Carlos distribution	.....	8,638.54	8,638.54
Little Colorado	.....	9,554.33	.....
San Carlos	.....	24,829.51	.....
San Pedro	.....	2,427.34	.....
Paradise-Verde	.....	929.14	929.14
Total Arizona	1,255.23	71,985.00	24,728.11
Arizona-California:			
Boulder Canyon Reservoir	124,249.26	282,161.45	141,000.00
Colorado River Basin	.....	164,320.85	.....
Colorado River (prior to July 1, 1914)	.....	43,710.00	.....
Less Ferry Reservoir	1,825.49	1,825.49	.....
Total Arizona-California	126,074.75	492,017.79	141,000.00
California:			
Shasta Valley	17,010.09	36,649.14	25,587.28
Imperial Valley (cooperative)	[1] 1,740.80	39,014.49	26,009.66
Imperial Valley	.....	2,794.04	.....
Owens Valley (cooperative)	.....	18,232.01	18,232.01
Owens Valley (old ledger)	.....	12,061.92	.....
Imperial Laguna	.....	1,543.81	1,543.81
Iron Canyon	.....	36,806.00	18,550.73
Jess Valley	.....	3,805.74	1,901.01
Kings River storage	.....	1,157.70	.....
Lassen County	.....	2,445.60	1,222.80
Furlock-Modesto	.....	278.97	.....
Oakdale So. San Joaquin	.....	1,079.16	.....
Putah Creek	.....	211.32	.....
Pitt River cooperative	.....	2,499.18	.....
Sacramento Valley	.....	43,620.72	.....
San Joaquin	.....	3,531.20	.....
San Luis Rey	.....	698.53	.....
San Ysidro	.....	7.50	.....
Shasta County cooperative	.....	5,645.75	2,297.38
Warners Ranch Reservoir	.....	5,378.35	5,378.35
Woodbridge	.....	180.47	.....
Total California	15,269.29	217,641.60	100,721.03

[1] Contra.

Statement showing costs of secondary project investigations and funds contributed for these investigations—Continued.

Features.	Cost, fiscal year 1923.	Total to June 30, 1923.	Contributed funds.
Colorado:			
Dolores		$4,256.27	
White River		4,357.00	
Little Snake River		951.43	
Montezuma		4,918.10	
San Luis Valley		4,318.01	
Total Colorado		18,800.81	
Colorado-Utah: Lower White River	$10,738.31	11,340.83	$7,000.00
Idaho:			
Mountain Home (cooperative)	2,442.23	15,334.25	9,000.00
Mountain Home		5,978.57	
Dubois (cooperative)	7,834.87	7,834.87	3,689.00
Dubois		17,252.06	
Black Canyon[2]	[1] 15,123.67		
Idaho investigations		1,327.25	
Island Park		4,774.53	
Swan Valley		544.88	
Port Neuf		2,168.01	
General investigations		1,191.78	
Weiser River storage		918.96	
Wood River		168.95	
Succor Creek		2,392.67	
Total Idaho	[1] 4,846.57	59,886.78	12,689.00
Montana:			
Camas	100.65	100.65	100.00
Clarks Fork (old ledger)		5,581.23	
Clarks Fork		3,666.95	
Crow Reservation		18,911.96	
Judith Basin		2,891.42	2,891.42
Lake Basin		7,103.26	
Bitter Root		2,719.64	
Madison River		10,729.09	
Marias		13,546.39	
Missoula-Huson		3,086.33	
Toston, vicinity of		544.58	
Kalispell		73.29	73.29
Tally Lake		2,544.21	2,544.21
Cut Bank		1,863.01	1,863.01
Total Montana	100.65	73,362.01	7,471.93
Montana-North Dakota: Surveys		9,296.90	
Nebraska:			
Tri-County	5,000.00	8,381.70	5,000.00
Lower Platte	4,709.87	23,844.61	15,400.00
South Platte		2,877.01	
Total Nebraska	9,709.87	35,103.32	20,400.00
Nevada:			
Humbolt River		722.55	
Walker River		13,696.37	
Upper Owyhee		292.08	292.08
Total Nevada		14,711.00	292.08
New Mexico:			
Pecos Valley	1,749.42	11,617.82	5,700.00
Middle Rio Grande	3,794.93	9,896.52	6,500.00
Penasco	2,661.55	2,661.55	
La Platta		28,064.33	
Las Vegas		5,014.09	
Urton Lake		17,464.70	
Total New Mexico	8,205.90	74,719.01	12,200.00
North Dakota:			
Bismark		13,621.69	
Bowman		4,025.03	
Little Missouri		11,933.52	
Washburn		10,532.73	
Nesson		17,471.83	
Total North Dakota		57,584.80	

[1] Contra.

[2] Transferred to Boise project.

Statement showing costs of secondary project investigations and funds contributed for these investigations—Continued.

Features.	Cost, fiscal year 1923.	Total to June 30, 1923.	Contributed funds.
Oklahoma:			
Lawton		$13,774.82	
Turkey Creek		137.30	
Cimarron		8,891.17	
Oklahoma reconnaissance		400.00	
Red River		60,209.27	
Total Oklahoma		83,412.56	
Oregon:			
Malheur (cooperative)	$4,221.78	4,221.78	$5,000.00
Malheur		88,472.72	14,724.61
Baker	36,750.07	53,439.09	5,000.00
Central Oregon		39,128.82	
Columbia River (cooperative)		17,008.51	
John Day		16,009.57	
Deschutes		22,893.15	17,896.88
Do	[1] 25.43	8,360.96	
Harney		1,046.62	
Klamath River investigations		347.39	
Ochoco		3,570.30	4,307.09
Owyhee (Oregon cooperative)		1,615.74	
Owyhee (Oregon secondary)		1,267.29	
Owyhee (contract)		8,709.22	4,354.61
Rogue River		1,426.96	942.07
Silver Creek		334.23	
Silver Lake		3,407.03	775.91
Warner Valley		1,181.85	
White River		97.03	
Willamette Valley		378.20	
Teel District		456.35	
General investigations		226.43	
Total Oregon	40,946.42	273,599.24	53,001.17
South Dakota: Angostura		6,874.31	3,542.61
Texas:			
Lower Rio Grande (flood control)—			
Water Users' Association	2,304.71	12,543.12	12,543.12
Associated improvement district	5,506.79	5,506.79	5,506.79
Lower Rio Grande (irrigation)		32,598.81	15,394.44
Lower Rio Grande (irrigation district)		558.49	558.49
Cotulla		110.00	
Red Bluff Reservoir	4,600.83	5,425.68	5,500.00
Pecos River surveys		7,120.71	
Total Texas	12,412.33	63,863.60	39,502.84
Utah:			
Castle Peak	78.50	24,794.13	999.45
Salt Lake Basin	20,695.18	31,053.02	25,500.00
Price River investigations	127.67	127.67	
Price River		17.73	
Cache Valley	334.26	334.26	5,000.00
Transmountain diversions	1,571.35	1,571.35	
Spanish Fork-Lehi drainage	100.91	100.91	
Dixie Reservoir		863.52	
Utah reconnaissance		632.59	
Mammoth Reservoir		404.27	
Green River (cooperative)		10,494.18	5,247.09
Green River water-right investigations		252.74	
Bear Lake		18,827.72	
Provo-Weber		141.35	
Utah Lake		34,049.30	
Juab investigations		4,196.68	4,196.68
Total Utah	22,907.87	127,861.42	40,943.22
Washington:			
Benton		11,167.45	
Columbia River Basin investigations	[1] 165.98	5,687.02	
Columbia River power	427.51	4,042.95	
Kittitas		19,366.90	
Lower Snake River-Pasco		2,099.49	
Methow-Okanogan		192.14	
Palouse		76,409.01	
Palouse cooperative		10,201.92	

[1] Contra.

Statement showing costs of secondary project investigations and funds contributed for these investigations—Continued.

Features.	Cost, fiscal year 1923.	Total to June 30, 1923.	Contributed funds.
Washington—Continued.			
Wapato	.....	$36,465.77	.....
Priest Rapids	.....	6,216.01	.....
Snake and Columbia Rivers investigations	.....	82.81	.....
Total Washington	$261.53	171,931.47	.....
Wyoming:			
Saratoga-Encampment	71.47	4,883.61	.....
Alcova-Casper	571.81	4,809.77	.....
Pathfinder pumping	.....	1,568.96	.....
Church Butte	.....	1,442.28	.....
De Smet	.....	8,917.38	.....
Fifteen Mile	.....	125.06	.....
Green River	.....	320.15	.....
Lyman	.....	2,477.77	.....
North Platte cooperative	.....	5,868.66	.....
Wyoming cooperative	.....	3,681.76	.....
General investigations	.....	2,073.34	.....
Total Wyoming	643.28	36,168.74	.....
Miscellaneous:			
General reconnaissance	.....	6,182.31	.....
Miscellaneous investigations	56.16	8,924.19	.....
Preliminary investigations	.....	80,488.73	.....
Experimental investigations	3,628.35	6,200.41	.....
Total miscellaneous	3,684.51	101,795.64	.....
Grand total secondary projects	247,363.37	2,001,956.83	[3]$463,491.99

[3] Of the contributed funds, $33,344.29 is uncollected.

INDIAN IRRIGATION PROJECTS.

(These projects are being built under a cooperative working agreement between the Bureau of Reclamation and the Office of Indian Affairs, whereby the Bureau of Reclamation forces have charge of the work on the ground and report to the Commissioner of the Bureau of Reclamation who advises the Commissioner of Indian Affairs of details. The Indian Service sets the general policy to be followed and determines the rate of progress through the medium of the estimates for the annual appropriations in the Indian appropriation bill.)

MONTANA, BLACKFEET (INDIAN) PROJECT.

R. M. SNELL, project manager, Browning, Mont.

The Blackfeet project is located in Glacier and Pondera Counties, and is served by the Great Northern Railway. The source of water supply is Two Medicine River and Cut Bank, Badger, Birch, Whitetail, and Blacktail Creeks. Project towns are Browning, Blackfoot, Cut Bank, and Valier. Rainfall averages about 12 inches and the temperature ranges from an average low of about—35° F. to an average high of about 90° F. The average elevation of the irrigable area is about 3,850 feet above sea level; the soil is principally a rich sandy loam with some gravelly loam and gumbo. The principal products are hay, grain, and vegetables and the principal markets are Great Northern Railway towns from St. Paul to the Pacific coast. The irrigation plan provides for the diversion of water from several streams through six canal systems and for the use of four reservoirs, two of which are now constructed to part capacity.

SUMMARY OF DATA FOR BLACKFEET (INDIAN) PROJECT TO END OF FISCAL YEAR 1923.

Area and crops:	
Irrigable acreage when project is complete	107,500
Indian land, June 30, 1923 (acres)	107,500
Acreage bureau could supply, season of 1922	20,900
Acreage irrigated, season of 1922	8,652
Acreage cropped under irrigation, season of 1922	8,425
Acreage dry-farmed, season of 1922	8,893
Value of irrigated crops, season of 1922	$136,514
Value of irrigated crops per acre cropped	$16.20
Value of dry-farmed crops, season of 1922	$104,526
Value of dry-farmed crops per acre cropped	$11.75
Finances:	
Appropriations—	
Fiscal year 1923, amount of congressional authorizations	$44,629.52
Disbursements and liabilities	44,629.52
Fiscal year 1924, amount specified in appropriation act	60,000.00

	Fiscal year 1923.	To June 30, 1923.
Irrigation works:		
Net construction cost	$32,482.31	$1,176,842.91
Less water-right contracts[1]	9,922.85	23,595.70
Balance	22,559.46	1,153,247.21

	Indian funds.	Judgments Court of Claims.	Increase of compensation (net.)	Total.
Investments:				
Disbursements	$1,248,760.37	$29.91	$14,227.21	$1,263,017.49
Less collections	52,858.32			52,858.32
Net investment June 30, 1923	1,195,902.05	29.91	14,227.21	1,210,159.17

[1] Nominal construction assessment pending completion of project and determination of total charge per acre.

Status of current accounts receivable, as of June 30, 1923.

	Due.		Collected.		Uncollected June 30, 1923.
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.	
To return net construction cost:					
Water-right charges	$9,922.85	$23,595.70	$1,469.40	$3,590.40	$20,005.30
Charges paid in advance			32.47	32.47	
Revenues, rentals of irrigating water	9,700.44	41,660.33	12,153.88	44,910.27	7,750.06
Miscellaneous uncollected					33.89
Other miscellaneous collections			250.33	15,325.18	
Grand total collections			13,906.08	52,858.32	

Uncollected construction water right charges as of June 30, 1923, 86 per cent of total accruals.
Uncollected operation and maintenance charges (water rentals) as of June 30, 1923, 18 per cent of total accruals.

ACTIVITIES DURING FISCAL YEAR.

Badger-Fisher division.—Minor timber structures were placed on the lateral system. About 2 miles of Four Horns Reservoir outlet canal were excavated and two concrete drops and four minor timber structures were placed.

Operation and maintenance.—The Two Medicine, Badger-Fisher, Piegan, and Birch Creek divisions were operated during the season of 1922. Water was delivered on a water-rental basis. On account of comparatively heavy precipitation during the growing season the amount of water delivered was only about 26 per cent of that delivered during the 1921 season. A total of 8,652 acres were irrigated, 1,031 of which were irrigated by Indians or for Indian families.

Operation data, Blackfeet project, by calendar years.

Item.	1917	1918	1919	1920	1921	1922
Acreage for which the bureau was prepared to furnish water	21,500	21,500	21,500	21,500	[1] 20,900	[1] 20,900
Acreage irrigated	2,448	3,484	9,767	9,937	14,650	8,652
Miles of canal operated	125	152	199	192	255	221
Water diverted (acre-feet)	21,284	22,324	38,319	22,133	45,282	17,553
Water delivered to land (acre-feet)	2,663	6,205	14,000	8,955	19,674	5,067
Per acre of land irrigated (acre-feet)	1.08	1.88	1.43	.90	1.34	.59

[1] The 20,900 acres reported here is the amount that can be supplied through canals now constructed. The decrease from the amount given in 1920 is due to reclassification of some of the lands. Lateral systems are complete except for minor structures and lateral extensions to reach 48,240 acres.

Settlement data, Blackfeet project.

Item.	1916	1917	1918	1919	1920	1921	1922
Total number of farms on project	3,000	3,000	3,000	2,900	2,900	2,900	2,900
Number of irrigated farms	79	91	125	329	351	497	322
Operated by owners or managers	79	84	76	95	151	172	110
Operated by tenants		7	49	234	251	325	212
Population	170	180	229	299	319	435	317
Number of towns	4	4	4	4	4	4	4
Population	1,750	1,900	2,000	3,350	3,000	2,725	3,550
Total population in towns and on farms	1,920	2,070	2,229	3,649	3,319	3,160	3,867
Number of schools	5	3	4	6	6	7	8
Number of churches	8	8	8	8	8	8	8
Number of banks	3	4	4	6	5	4	2
Capital stock					$130,000	$120,000	$56,000
Deposits					$851,600	$603,000	$397,600
Depositors					2,257	1,790	1,150

MONTANA, FLATHEAD (INDIAN) PROJECT.

C. J. Moody, project manager, St. Ignatius, Mont.

The Flathead project is located in western Montana in Flathead, Missoula, and Sanders Counties, on the Northern Pacific Railway. There are 15 towns on the project with a total population of 5,500. The source of water supply is from about 70 creeks flowing from the mountains that surround the irrigable lands. The elevation of the irrigable area is 3,000 feet above sea level. The range of temperature is from an average maximum of 96° F. to an average minimum of −21° F. The character of the soil on the Jocko division is a gravelly loam; on the Camas and Mission Valley divisions, clay and sandy loam. The irrigation season is from May 1 to October 15, 168 days. Duty of water in acre-feet per annum is 2.75 on the Jocko division and 1.5 on the Camas and Mission Valley divisions. The principal products are hay, grain, vegetables, and fruit. The principal markets are Butte and Missoula, Mont.; Spokane, Wash.; and local mining towns and lumber camps.

The Jocko division includes about 12,000 acres irrigated by direct diversion from the Jocko River, and tributaries without storage. The Camas division includes about 10,500 acres of land lying along the west side of the Little Bitterroot River, which is the water supply. Storage is obtained in Little Bitterroot Lake, where a reservoir of 18,000 acre-feet has been constructed; at the Hubbart Reservoir site, with a capacity of 12,000 acre-feet, now being constructed; and at Dry Fork Reservoir, proposed capacity 3,400 acre-feet, which has been constructed to 2,000 acre-feet capacity. The Mission Valley division consists of about 102,000 acres, for which the water supply comes from creeks rising in the Mission Mountains, supplemented by the surplus waters of the Jocko River. Ten reservoirs are proposed with a total capacity of 105,000 acre-feet of which five are constructed to part capacity with 38,000 acre-feet now available for storage. A feed canal 45 miles in length along the foot of the Mission Mountains has been constructed to collect the water from the several streams. Another feed canal is in course of construction to take surplus waters from the Jocko River 10 miles to Tabor Reservoir.

SUMMARY OF DATA FOR FLATHEAD (INDIAN) PROJECT TO END OF FISCAL YEAR 1923.

Areas and crops:		
Irrigable acreage when project is complete		124,500
Public land entered to June 30, 1923	43,008	
State land unsold on June 30, 1923	862	
Indian land, June 30, 1923	33,225	
Private land, June 30, 1923	47,405	
Acreage bureau could supply, season of 1922		106,920
Acreage irrigated, season of 1922		30,356
Acreage cropped under irrigation, season of 1922		28,769
Value of irrigated crops, season of 1922		$522,680
Value of irrigated crops per acre cropped		$18.05
Finances:		
Appropriations—		
Fiscal year 1923, amount of congressional authorizations	$233,609.17	
Disbursements and liabilities	231,062.69	
Unencumbered balance June 30, 1923		$2,546.48
Fiscal year 1924, amount specified in appropriation act		555,000.00

	Fiscal year 1923	To June 30, 1923
Irrigation works:		
Net construction cost	$311,819.68	$4,803,406.38
Less water-right contracts [1]	47,640.72	110,052.98
Balance	264,178.96	4,693,353.40

[1] Nominal construction assessment pending completion of project and determination of total charge per acre.

Summary of data for Flathead (Indian) project to end of fiscal year 1923—Continued.

	Indian funds.	Increase of compensation (net).	Total.
Investment:			
Disbursements	$5,029,402.91	$145,104.27	$5,174,507.18
Less collections	229,378.70		229,378.70
Net investment	4,800,024.21	145,104.27	4,945,128.48

Status of current accounts receivable, as of June 30, 1923.

	Due.		Collected.		Uncollected June 30, 1923.
	Fiscal year 1923.	To June 30, 1923.	Fiscal year 1923.	To June 30, 1923.	
To return net construction cost:					
Water-right charges	$47,640.72	$110,052.98	$11,891.23	$25,542.30	$84,510.68
Charges paid in advance			[1] 43.22		
Revenues:					
Rentals of irrigating water	39,417.13	206,464.11	31,272.97	149,130.87	57,333.24
Rentals of grazing and farming lands		5.00		5.00	
Total	39,417.13	206,469.11	31,272.97	149,135.87	57,333.24
Miscellaneous uncollected					52.31
Other miscellaneous collections			5,263.88	68,564.05	
Grand total collections			46,626.86	229,378.70	

[1] Contra.

Uncollected construction water-right charges as of June 30, 1923, 76.8 per cent of total accruals.
Uncollected water-rental charges as of June 30, 1923, 27.8 per cent of total accruals.

ACTIVITIES DURING FISCAL YEAR.

Camas division.—Construction of a variable radius arch concrete dam at the Hubbart Reservoir, with an average height of about 100 feet, was begun. Stripping and excavation were completed and 25 per cent of the concrete was placed during the year. Extensions of lateral system were made to include 500 acres.

Mission Valley division.—Excavation of the Tabor feed canal was begun and completed to a point between Falls Creek and the North Fork of Jocko River. Enlargement of Ninepipe Dam was begun and the placing of embankment was 50 per cent completed. Enlargement of the Pablo feeder canal below Post Creek to a capacity of 400 second-feet was begun. Polson Lateral C, to irrigate 500 acres north of the Polson Hill, was constructed. Extensions of laterals near Round Butte were made to irrigate 400 acres, and a lock-joint pipe siphon 2,600 feet long with 21-inch and 18-inch diameter pipe was begun to supply these laterals.

Jocko division.—Construction of laterals diverting from Jocko River and Revais Creek to supply about 1,400 acres near Dixon was begun in the spring of 1923.

CROPS AND DEVELOPMENT.

There was a large increase of alfalfa which amounted to 47 per cent of the total irrigated area. Alfalfa seed crops produced good values on the Camas division. There was a large increase in dairy

stock and a marked tendency toward diversified farming, resulting in a better financial condition among the water users. Dairy cattle were being obtained through local dairy loan associations and by the aid of local bankers and merchants. Crop conditions in the spring season of 1923 were very good on account of frequent heavy rains, and there was considerable immigration of farmers from dry-land sections wishing to lease irrigable land. Activity of local land companies has resulted in advertising the project in various sections of the United States. Prospects were favorable for an increase in the acreage farmed on the irrigable area.

Operation data, Flathead project, by calendar years.

Item.	1917	1918	1919	1920	1921	1922
Acreage for which bureau was prepared to supply water (storage incomplete)	80,300	84,300	91,000	98,000	105,500	106,920
Acreage irrigated	15,863	27,128	34,453	32,836	30,485	30,356
Miles of canal operated	364	674	741	750	713	717
Water diverted (acre-feet)	54,853	84,358	112,112	80,961	105,422	128,190
Water delivered to the land (acre-feet)	21,691	34,696	50,607	40,958	47,445	40,380
Per acre of land irrigated (acre-feet)	1.37	1.28	1.47	1.25	1.55	1.33

Settlement data, Flathead project.

Item.	1918	1919	1920	1921	1922
Total number of irrigable farms	2,630	2,630	2,000	2,030	2,034
Population	14,500	14,500	[1] 15,000	[1] 14,000	[1] 6,000
Number of irrigated farms	833	850	1,028	1,105	1,008
Operated by owners or managers	670	650	799	944	848
Operated by tenants	163	200	229	161	160
Population	1,679	1,700	2,380	2,302	2,094
Number of towns	14	14	14	15	15
Population	4,325	5,250	5,445	5,500	5,500
Total population in towns and farms	18,825	19,750	20,445	19,500	[1] 11,500
Number of public schools	60	55	45	45	40
Number of churches	15	16	19	19	19
Number of banks	11	11	11	11	11
Total capital stock	$221,000	$250,000	$287,000	$287,000	$250,000
Amount of deposits	$1,011,177	$1,316,907	$1,457,645	$1,238,117	$919,774
Number of depositors	4,384	4,656	4,447	4,301	4,048

[1] Estimated.

MONTANA, FORT PECK (INDIAN) PROJECT.

E. L. Decker, project manager, Poplar, Mont.

The Fort Peck project is located in Sheridan, Valley, and Roosevelt Counties in the northeastern part of Montana, and is comprised in a major portion of the Fort Peck Indian Reservation. The irrigation plan as outlined consists of five principal systems, as follows: Big Porcupine division, comprising about 4,000 acres, to be supplied with water from Big Porcupine Creek, the natural flow to be supplemented by storage; Little Porcupine division, of 2,000 acres, to be supplied by storage of the flood waters of Little Porcupine Creek; Poplar division, of about 30,000 acres, located in the Poplar River Valley, to be supplied from the natural flow of the Poplar River, supplemented by storage; Big Muddy division, of 16,000 acres, to be supplied by the natural flow of the Big Muddy, Smoke, and Wolf Creeks, supplemented by storage; and the Missouri River division, of 84,000 acres, to be supplied by a gravity canal from the Missouri River. It was also found possible to irrigate about 18,000 acres by pumping from the Missouri Canal with lifts of from 12 to 20 feet.

The irrigation season extends from May 1 to September 30, a total of 153 days. The average elevation of the project lands is 2,000 feet above sea level. The average annual precipitation is slightly over 13 inches, and the maximum range of temperature from −40° to 100° F. The soil is very fertile, varying from a heavy clay to a light sandy loam. Crops best suited to the project are hay, grains, potatoes, onions, truck, and sugar beets. The project is located along the main line of the Great Northern Railroad and is within range of good markets.

SUMMARY OF DATA FOR FORT PECK (INDIAN) PROJECT TO END OF FISCAL YEAR 1923.

Areas and crops:		
Irrigable acreage when project is complete		153,394
Public land entered to June 30, 1923	9,713	
Public land open to entry on June 30, 1923	107	
Public land withdrawn on June 30, 1923	100	
State land unsold on June 30, 1923	80	
Indian land, June 30, 1923	133,394	
Private land, June 30, 1923	10,000	
Acreage bureau could supply, season of 1922		22,795
Acreage irrigated, season of 1922		611
Acreage cropped under irrigation, season of 1922		611
Acreage dry-farmed, season of 1922, about		2,000
Value of irrigated crops, season of 1922		$9,603
Value of irrigated crops per acre cropped		$15.72
Value of dry-farmed crops, season of 1922, about		$10,000
Value of dry-farmed crops per acre cropped, about		$5.00
Finances:		
Appropriations—		
Fiscal year 1923, amount of congressional authorizations	$20,666.92	
Disbursements and liabilities	16,487.45	
Unencumbered balance June 30, 1923		$4,179.47
Fiscal year 1924, amount specified in appropriation act		30,000.00

	Fiscal year 1923.	To June 30, 1923.
Irrigation works:		
Net construction cost	$20,544.67	$886,665.81
Less water-right contracts	8,373.05	16,633.70
Balance	12,171.62	870,032.11

Investment.	Indian funds.	Judgments, Court of Claims.	Increase of compensation (net).	Total.
Disbursements	$906,963.52	$168.34	$17,245.28	$924,377.14
Less collections	25,389.17			25,389.17
Net investment, June 30, 1923	881,574.35	168.34	17,245.28	898,987.97

Note.—Water-right contracts cover charge of 50 cents an acre on land irrigated for the year 1920 and 50 cents an acre on all land under ditches allotted or owned for 1921 and years thereafter.

Status of current accounts receivable as of June 30, 1923.

	Due.		Collected.			Uncollected June 30, 1923.
	Fiscal year 1923.	To date.	Cash.		Other credits, to date.	
			Fiscal yea r1923.	To date.		
To return net construction cost: Water-right charges	$8,373.05	$16,633.70	$253.20	$750.44	.....	$15,883.26
Revenues:						
Rentals of irrigation water	627.74	4,683.41	265.25	3,100.40	$208.15	1,374.86
Rentals of grazing and farming lands	103.93	509.93	103.93	509.93	.....	.....
Total	731.67	5,193.34	369.18	3,610.33	208.15	1,374.86
Miscellaneous uncollected	.....	.....	.....	.....	.....	662.00
Other miscellaneous collections	.....	.....	1,049.92	21,028.40	.....	.....
Grand total collections	.....	.....	1,672.30	25,389.17	.....	.....

Uncollected construction water right charges as of June 30, 1923, 95 per cent of total accruals.
Uncollected operation and maintenance (water rental) charges as of June 30, 1923, 29.3 per cent of total accruals.

ACTIVITIES DURING FISCAL YEAR.

Construction consisted of the excavation of 2 miles of lateral on the Big Porcupine division to irrigate about 300 acres of irrigable land, and the installation of minor structures in connection with operation.

Four divisions of the project were operated during 1922, the season extending from May 1 to September 30. Considerable difficulty has been experienced by the bureau in making use of lands and water now available. Chief among these is the fact that the major portion of the lands for which water has been supplied belongs to Indian allottees and is very poorly farmed. An earnest endeavor on the part of the bureau during the present season to induce more and better farming is meeting with success, over 150 acres of alfalfa having been seeded by Indians and whites. The irrigated acreage of 1922 will be more than doubled during the season of 1923.

Maintenance consisted of the repair to canal banks on the Big Porcupine and Poplar divisions where excessive spring floods did considerable damage. About 4 miles of canal and lateral were cleared of brush and water growth, minor structures were repaired, and in some cases replacements were made.

Operation data, Fort Peck project, by calendar years.

Item.	1917	1918	1919	1920	1921	1922
Acreage for which bureau was prepared to supply water	14,220	16,620	16,620	16,620	20,762	22,795
Acreage irrigated	1,602	1,299	1,047	1,568	1,021	611
Miles of canals operated	126	158	158	158	158	88
Water diverted (acre-feet)	3,600	3,000	3,000	3,600	3,000	7,760
Water delivered to land (acre-feet)	1,550	1,400	2,000	2,000	1,800	622
Per acre of land irrigated (acre-feet)	1.2	1.08	1.9	1.3	1.8	1.02

Settlement data, Fort Peck project.

Item.	1917	1918	1919	1920	1921	1922
Total number of allotments on project (irrigable)	1,780	1,780	1,780	1,780	1,780	1,780
Population (Indian)	2,130	2,160	2,157	2,070	2,150	2,174
Number of irrigated farms	58	66	62	70	35	30
Operated by owners or managers	57	60	37	45	33	17
Operated by tenants	1	6	25	25	2	13
Population	134	130	110	150	150	68
Number of towns	5	5	5	5	5	5
Population (white)	2,650	3,500	4,850	5,000	5,000	5,000
Total population in towns and on farms	2,784	3,630	4,960	5,150	7,150	7,174
Number of schools:						
Indian	5	5	4	4	2	2
White	5	5	5	5	5	5
Number of churches	8	9	9	10	10	10
Number of banks	6	9	9	9	6	7
Total capital stock	$130,000	$185,000	$225,000	$225,000	$145,000	$170,000
Amount of deposits	$580,000	$1,095,000	$1,555,000	$1,700,000	$1,150,000	$1,150,000
Number of depositors	2,630	3,700	4,500	4,700	3,200	3,000

APPENDIX.

LEGISLATION.

ELECTRIC POWER ON SALT RIVER PROJECT.

AN ACT Authorizing the sale of surplus power developed under the Salt River reclamation project Arizona. (Act September 18, 1922, 42 Stat. 847.)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That whenever a development of power is necessary for the irrigation of lands under the Salt River reclamation project, Arizona, or an opportunity is afforded for the development of power under said project, the Secretary of the Interior is authorized, giving preference to municipal purposes, to enter into contracts for a period not exceeding fifty years for the sale of any surplus power so developed, and the money derived from such sales shall be placed to the credit of said project for disposal as provided in the contract between the United States of America and the Salt River Valley Water Users' Association, approved September 6, 1917: *Provided*, That no contract shall be made for the sale of such surplus power which will impair the efficiency of said project: *Provided, however*, That no such contract shall be made without the approval of the legally organized water users' association or irrigation district which has contracted with the United States to repay the cost of said project: *Provided further*, That the charge for power may be readjusted at the end of five, ten, or twenty year periods after the beginning of any contract for the sale of power in a manner to be described in the contract.

IRRIGATION INVESTIGATION IN NEBRASKA.

JOINT RESOLUTION Providing for an additional investigation of the tricounty irrigation project Nebraska. (Resolution of September 22, 1922, Pub. Res. No. 74, 42 Stat. 1057.)

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Interior, upon the payment to him in advance of the necessary funds to defray the expenses thereof, be, and he is hereby, authorized to make an additional investigation of the tricounty project in Nebraska, comprising the counties of Gosper, Phelps, and Kearney, in said State, and to extend said investigation into Adams County, Nebraska, with a view of ascertaining whether it is practicable to convey for irrigation purposes flood waters from the Platte River onto lands in said counties.

APPROPRIATIONS FOR RECLAMATION SERVICE.

(Extract from) an act making appropriations for the Department of the Interior for the fiscal year ending June 30, 1924, and for other purposes. (Act January 24, 1923, Public No. 395, 42 Stat. 1174.)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the following sums are appropriated, out of any money in the Treasury not otherwise appropriated, for the Department of the Interior for the fiscal year ending June 30, 1924, namely:

* * * * * * *

RECLAMATION SERVICE.

The following sums are appropriated out of the special fund in the Treasury of the United States created by the act of June 17, 1902, and therein designated "the reclamation fund," to be available immediately:

For all expenditures authorized by the act of June 17, 1902 (Thirty-second Statutes, page 388), and acts amendatory thereof or supplementary thereto, known as the reclamation law and all other acts under which expenditures from said fund are authorized, including salaries in the District of Columbia and elsewhere; examination of estimates for appropriations in the field; refunds for overcollections hereafter received

on account of water-right charges, rentals, and deposits for other purposes; printing and binding, not exceeding $30,000; law books, books of reference, periodicals, engineering and statistical publications, including their exchange, not exceeding $1,500; purchase, maintenance, and operation of horse-drawn or motor-propelled passenger-carrying vehicles; payment of damages caused to the owners of lands or private property of any kind by reason of the operations of the United States, its officers or employees, in the survey, construction, operation, or maintenance of irrigation works, and which may be compromised by agreement between the claimant and the Secretary of the Interior; and payment for official telephone service in the field hereafter incurred in case of official telephones installed in private houses when authorized under regulations established by the Secretary of the Interior:

Salt River project, Arizona: For examination of project and project accounts, $5,000;

Yuma project, Arizona-California: For operation and maintenance, continuation of construction, and incidental operations, $430,000;

Orland project, California: For operation and maintenance, continuation of construction, and incidental operations, $50,000;

Grand Valley project, Colorado, including Orchard Mesa unit: For operation and maintenance, continuance of construction, and incidental operations, $395,000;

Uncompahgre project, Colorado: For operation and maintenance, continuation of construction, and incidental operations, $185,000;

Boise project, Idaho: For operation and maintenance, continuation of construction, and incidental operations: *Provided*, That the expenditure for drainage shall not exceed the amount paid by the water users pursuant to the provisions of the Boise public notice dated February 15, 1921, except for drainage in irrigation districts formed under State laws and upon the execution of agreements for the repayment to the United States of the costs thereof, $1,390,000;

King Hill project, Idaho: For operation and maintenance, continuation of construction, and incidental operations, $35,000;

Minidoka project, Idaho: For operation and maintenance, continuation of construction, and incidental operations, with authority in connection with the construction of American Falls Reservoir, to purchase or condemn and to improve suitable land for a new town site to replace the portion of the town of American Falls which will be flooded by the reservoir, and to provide for the removal of buildings to such new site and to plat and to provide for appraisal of lots in such new town site and to exchange and convey such lots in full or part payment for property to be flooded by the reservoir and to sell for not less than the appraised valuation any lots not used for such exchange, $665,000;

Huntley project, Montana: For operation and maintenance, continuation of construction, and incidental operations, $115,000;

Milk River project, Montana: For operation and maintenance, continuation of construction, and incidental operations, $140,000: *Provided*, That repayment of the construction cost of the project may be made through a division by the Secretary of the Interior of such cost into a primary construction charge and a supplemental construction charge, of approximate equality, the former payable according to section 2 and the latter payable according to section 4 of the extension act of August 13, 1914 (Thirty-eight Statutes at Large, page 686);

Sun River project, Montana: For operation and maintenance, continuation of construction, and incidental operations, $145,000;

Lower Yellowstone project, Montana-North Dakota: For operation and maintenance, continuation of construction, and incidental operations, $120,000;

North Platte project, Nebraska-Wyoming: For operation and maintenance, continuation of construction, and incidental operations, $1,420,000;

Newlands project, Nevada: For operation and maintenance, continuation of construction, and incidental operations, $735,000;

Carlsbad project, New Mexico: For operation and maintenance, continuation of construction, and incidental operations, $80,000;

Rio Grande project, New Mexico-Texas: For operation and maintenance, continuation of construction, and incidental operations, $900,000;

North Dakota pumping project, North Dakota: For operation and maintenance, continuation of construction, and incidental operations, $100,000;

Baker project, Oregon: For investigation, commencement of construction, and incidental operations, $500,000;

Umatilla project, Oregon: For operation and maintenance, continuation of construction, and incidental operations, $900,000;

Klamath project, Oregon-California: For operation and maintenance, continuation of construction, and incidental operations, $700,000;

Belle Fourche project, South Dakota: For operation and maintenance, continuation of construction, and incidental operations, $95,000;

Strawberry Valley project, Utah: For operation and maintenance, continuation of construction, and incidental operations, $45,000;

Okanogan project, Washington: For operation and maintenance, continuation of construction, and incidental operations, $65,000;

Yakima project, Washington: For operation and maintenance, continuation of construction, and incidental operations, $1,310,000;

Riverton project, Wyoming: For operation and maintenance, continuation of construction, and incidental operations, $600,000;

Shoshone project, Wyoming: For operation and maintenance, continuation of construction, and incidental operations, $925,000;

Secondary projects: For cooperative and miscellaneous investigations, $100,000;

For the continued investigation of the feasibility of irrigation, water storage, and related problems on the Colorado River, and investigation of water sources of said river, $100,000;

Under the provisions of this act no greater sum shall be expended nor shall the United States be obligated to expend, during the fiscal year 1924, on any reclamation project appropriated for herein, an amount in excess of the sum herein appropriated therefor, nor shall the whole expenditures or obligations incurred for all of such projects for the fiscal year 1924 exceed the whole amount in the "reclamation fund" for that fiscal year;

Ten per centum of the foregoing amounts shall be available interchangeably for expenditures on the reclamation projects named; but not more than 10 per centum shall be added to the amount appropriated for any one of said projects, except that should existing works or the water supply for lands under cultivation be endangered by floods or other unusual conditions, an amount sufficient to make necessary emergency repairs shall become available for expenditure by further transfer of appropriation from any of said projects upon approval of the Secretary of the Interior;

Whenever, during the fiscal year ending June 30, 1924, the Director of the Reclamation Service shall find that the expenses of travel can be reduced thereby, he may, in lieu of actual traveling expenses, under such regulations as he may prescribe, authorize the payment of not to exceed 3 cents per mile for a motor cycle or 7 cents per mile for an automobile, used for necessary travel on official business.

Total, Reclamation Service, $12,250,000.

The aggregate of all estimates of appropriations from the "reclamation fund" contained in the Budget for any fiscal year shall be included in the totals of the Budget for that year.

RELIEF FOR INJURED RECLAMATION SERVICE EMPLOYEE.

AN ACT For the relief of William B. Lancaster. (Act February 5, 1923, 42 Stat. 204.)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Treasury be, and he is hereby, authorized and directed to pay, out of any money in the Treasury not otherwise appropriated, to William B. Lancaster, during his natural life, the sum of $40 per month, to date from the passage of this act, as compensation for injuries sustained while employed by the Reclamation Service at the west portal, Strawberry Tunnel, Strawberry Valley project, Utah, said monthly payments to be paid through the United States Employees' Compensation Commission.

DRAINAGE ON THE NEWLANDS PROJECT.

AN ACT Authorizing an appropriation to meet proportionate expenses of providing a drainage system for Piute Indian lands in the State of Nevada within the Newlands reclamation project of the Reclamation Service. (Act February 14, 1923, 42 Stat. 246.)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is hereby authorized to be appropriated out of any money in the Treasury not otherwise appropriated, the sum of $41,077.05, payable in 20 annual installments of $2,100 each, except the last, which shall be the amount remaining unpaid, for the purpose of meeting the proportionate expense of providing a drainage system for 4,047 acres of Piute Indian lands in the State of Nevada within the Newlands project of the Reclamation Service.

The money herein authorized to be appropriated shall be reimbursed in accordance with the provisions of law applicable to said Indian lands.

SPECIAL RECLAMATION INVESTIGATIONS.

AN ACT Authorizing the Secretary of the Interior to investigate the feasibility of reclamation projects on the Columbia River and various other irrigation projects. (Act February 21, 1923, Public No. 433, 42 Stat. 1281.)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the following sums are hereby authorized to be appropriated, out of any money in the Treasury not otherwise appropriated, to be immediately available for expenditure by the Secretary of the Interior, namely:

For investigations of the feasibility of irrigation by gravity or pumping, water sources, water storage, and related problems on the Columbia River and its tributaries, including the Columbia Basin project, $100,000; the Umatilla Rapids project, $50,000; in all, $150,000.

For cooperative and miscellaneous investigations of the feasibility of reclamation projects, $125,000 annually.

WATER RIGHTS UNDER BLACKFEET PROJECT.

AN ACT Authorizing the Secretary of the Interior to enter into an agreement with Toole County irrigation district, of Shelby, Mont., and the Cut Bank irrigation district, of Cut Bank, Mont., for the settlement of the extent of the priority to the waters of Two Medicine, Cut Bank, and Badger Creeks, of the Indians of the Blackfeet Indian Reservation. (Act February 26, 1923, 42 Stat. 1289.)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Interior be, and he is hereby, authorized to enter into an agreement, jointly or separately, with the Toole County irrigation district, of Shelby, Mont., and the Cut Bank irrigation district, of Cut Bank, Mont., and thereby to fix the extent of the prior right of the Indians residing and entitled to reside on the Blackfeet Indian Reservation, collectively, to the waters of Two Medicine, Cut Bank, and Badger Creeks: *Provided*, That said districts shall furnish in advance the entire cost to be incurred in determining the amount of the water of said streams to which such Indians are so entitled to priority.

RECLAMATION PROVISIONS OF THE APPROPRIATION ACT FOR THE DEPARTMENT OF AGRICULTURE.

(Extracts from) an act making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1924, and for other purposes. (Act February 26, 1923, Public, No. 446, 42 Stat. 1289.)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the following sums are appropriated, out of any money in the Treasury not otherwise appropriated, for the Department of Agriculture for the fiscal year ending June 30, 1924, namely:

* * * * * * *

General expenses, Bureau of Plant Industry.—* * * For investigations in connection with western irrigation agriculture, the utilization of lands reclaimed under the reclamation act, and other areas in the arid and semiarid regions, $94,420.

* * * * * * *

General expenses, Bureau of Soils.—* * * For examination of soils to aid in the classification of agricultural lands, in cooperation with other bureaus of the department and other departments of the Government, $15,000.

* * * * * * *

General expenses, Bureau of Public Roads.—* * * For investigating and reporting upon the utilization of water in farm irrigation, including the best methods to apply in practice; the different kinds of power and appliances, and the development of equipment for farm irrigation; the flow of water in ditches, pipes, and other conduits; the duty, apportionment, and measurement of irrigation water; the customs, regulations, and laws affecting irrigation; for the purchase and installation of equipment for experimental purposes; for the giving of expert advice and assistance; for the preparation and illustration of reports and bulletins on irrigation; for the employment of assistants and labor in the city of Washington and elsewhere; for rent outside of the District of Columbia; and for supplies and all necessary expenses, $72,000.

For investigating and reporting upon farm drainage and upon the drainage of swamp and other wet lands which may be made available for agricultural purposes; for preparing plans for the removal of surplus water by drainage, and for giving expert assistance by advice or otherwise in the drainage of such lands; for conducting field experiments and investigations concerning the construction and maintenance of farm-drainage work; for investigating and developing equipment intended for the

construction and maintenance of farm-drainage structures; for the purchase of materials and equipment; and for preparing and illustrating reports and bulletins on drainage; and for the employment of assistants and labor in the city of Washington and elsewhere; for rent outside of the District of Columbia; and for supplies and all necessary expenses, $72,260.

* * * * * * *

Demonstrations on reclamation projects.—To enable the Secretary of Agriculture to encourage and aid in the agricultural development of the Government reclamation projects; to assist, through demonstrations, advice, and in other ways, settlers on the projects; and for the employment of persons and means necessary in the city of Washington and elsewhere, $39,000.

RELIEF TO WATER USERS ON FEDERAL IRRIGATION PROJECT.

AN ACT To extend the time for payment of charges due on reclamation projects, and for other purposes
(Act of February 28, 1923, 42 Stat. 1324.)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 1 of the act entitled "An act to authorize the Secretary of the Interior to extend the time for payment of charges due on reclamation projects, and for other purposes," approved March 31, 1922, is amended by striking out the words "one year" where they appear in such section and inserting in lieu thereof the words "two years."

SEC. 2. That the Secretary of the Interior is authorized, in the manner and subject to the conditions imposed by such act of March 31, 1922, to extend for a period not exceeding two years from December 31, 1922, the date of any payment of any charge the date of payment of which has been extended under the provisions of section 1 of such act.

SEC. 3. That every charge, the date of payment of which is extended under the provisions of section 2 of this act, shall draw interest at the rate of 6 per centum per annum from the date from which it was so extended in lieu of any penalty that may now be provided by law, but in case such charge is not paid at the end of the period for which it is so extended any such penalty shall attach from the date the charge was originally due, as if no extension had been granted.

SEC. 4. That section 2 of such act of March 31, 1922, is amended by striking out the words "season of 1922" where they appear in such section and by inserting in lieu thereof the words "seasons of 1922 and 1923."

SEC. 5. That where an individual water user, or individual applicant for a water right under a Federal irrigation project constructed or being constructed under the act of June 17, 1902 (Thirty-second Statutes at Large, page 388), or any act amendatory thereof or supplementary thereto, is unable to pay any construction or operation and maintenance charge due excepting operation and maintenance charges for drainage on the Boise, Idaho, project, for the year 1922, or prior thereto, the Secretary of the Interior is hereby authorized, in his discretion, to add such accrued and unpaid charges to the construction charge of the land of such water user or applicant, and to distribute such accumulated charges equally over each of the subsequent years, beginning with the year 1924, at such rate per year as will complete the payment during the remaining years of the twenty-year period of payment of the original construction charge: *Provided,* That upon such adjustment being made, any penalties or interest which may have accrued in connection with such unpaid construction and operation and maintenance charges shall be canceled, and in lieu thereof the amount so due, and the payment of which is hereby extended, shall draw interest at the rate of 6 per centum per annum, paid annually from the time said amount became due to date of payment: *Provided further,* That the applicant for the extension shall first show to the satisfaction of the Secretary of the Interior detailed statement of his assets and liabilities and actual inability to make payment at the time of the application and an apparent ability to meet the deferred charges in 1924 and subsequent years: *And provided further,* That in case the principal and interest herein provided for are not paid in the manner and at the time provided by this act, any penalty now provided by law shall attach from the date the charge was originally due: *And provided further,* That similar relief in whole or in part may be extended by the Secretary of the Interior to a legally organized group of water users of a project, upon presentation of a sufficient number of individual showings made in accordance with the foregoing proviso to satisfy the Secretary of the Interior that such extension is necessary.

SUIT RESPECTING KLAMATH PROJECT LAND AUTHORIZED.

AN ACT Authorizing the State of California to bring suit against the United States to determine title to certain lands in Siskiyou County, Calif. (Act Mar. 3, 1923, 42 Stat. 1438.)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That consent is hereby given that a suit or suits may be instituted by or in behalf of the State of California in the Supreme Court of the United States to determine the right, title, and interest of such State to certain lands in Siskiyou County, California, alleged to have been ceded by such State to the United States by act of the Legislature of the State of California entitled "An act authorizing the United States Government to lower the water levels of any or all of the following lakes: Lower or Little Klamath Lake, Tule or Rhett Lake, Goose Lake, and Clear Lake, situated in Siskiyou and Modoc Counties, and to use any part or all of the beds of said lakes for the storage of water in connection with the irrigation and reclamation operations conducted by the Reclamation Service of the United States; also ceding to the United States all the right, title, interest, or claim of the State of California to any lands uncovered by the lowering of the water levels of any or all of said lakes not already disposed of by the State," approved February 3, 1905, and in any such suit the right, title, and interest of such State and of the United States may be fully tested and determined if the Secretary of the Interior is made a party to such suit.

Upon the request of such Secretary the Attorney General of the United States is authorized and directed to defend the right, title, and interest of the United States to such land or any part thereof.

APPROPRIATION FOR SPECIAL RECLAMATION INVESTIGATIONS.

(Extract from) an act making appropriations to supply deficiencies in certain appropriations for the fiscal year ending June 30, 1923, and prior fiscal years, to provide supplemental appropriations for the fiscal year ending June 30, 1924, and for other purposes. (Act Mar. 4, 1923, 42 Stat. 1527.)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the following sums are appropriated, out of any money in the Treasury not otherwise appropriated, to supply deficiencies in certain appropriations for the fiscal year ending June 30, 1923, and prior fiscal years, to provide supplemental appropriations for the fiscal year ending June 30, 1924, and for other purposes, namely:

* * * * * * *

RECLAMATION SERVICE.

For investigations of the feasibility of irrigation by gravity or pumping, water sources, water storage, and related problems on the Columbia River and its tributaries, and for cooperative and miscellaneous investigations of the feasibility of reclamation projects, including personal services in the District of Columbia and elsewhere; purchase, repair, maintenance, hire and operation of motor-propelled or horse-drawn passenger-carrying vehicles; and for all other expenses; reimbursable in the case of any project if and when adopted for construction by the United States or other agency; to remain available until December 31, 1924, as follows: Columbia Basin project, $100,000; Umatilla Rapids project, $50,000; cooperative and miscellaneous investigations of reclamation projects, $125,000; in all, $275,000.

LAW DECISIONS.

DRAINAGE.

Drainage works part of irrigation system.—Under the national irrigation act of June 17, 1902 (32 Stat. 388), and the extension act of August 13, 1914 (38 Stat. 686), the Secretary of the Interior has authority to provide for drainage as part of an extensive irrigation project in order to prevent damage to property from the operation of the irrigation system, and his determination that the expense of necessary drainage for the prevention of future injuries is a proper operation and maintenance charge to be assessed against the users is controlling, the term "operating expense," when applied to an irrigation system, including all damages to persons or property that may result from operation. (Nampa & Meridian Irr. Dist. *v.* Bond, 288 Fed. 541. For opinion trial court see 283 Fed. 569.)

WATER CHARGES.

Yuma project suit.—On April 30, 1923, the United States Supreme Court affirmed the decision of the United States Circuit Court of Appeals, sustaining the right of the Secretary of the Interior to issue the public notice of April 6, 1917, announcing a construction charge of $75 per irrigable acre for lands in the Valley division of the Yuma Federal irrigation project in Arizona. Suit was brought by the Yuma County Water Users' Association against project officials for the purpose of contesting the right of the Secretary to fix the charge in question. The association contended that a certain letter by the Secretary of the Interior, dated May 10, 1904, was a public notice within the meaning of the reclamation law and fixed the maximum liability of the water users at $35.26 per irrigable acre. The association also claimed that its contract provided that payment for construction should not be required until the project was completed and that the project was still incomplete, and therefore public notice announcing charges could not be legally issued. The United States took the position that the project was complete so far as the Valley division was concerned, that the Secretary's letter was not a public notice, and that the water users must pay the cost of construction as announced in the public notice of April 6, 1917. On February 26, 1920, after a trial on the merits, United States District Judge William H. Sawtelle dismissed the suit. From this decision the association appealed to the Circuit Court of Appeals, and on November 7, 1921, that court affirmed the decision of the trial court (275 Fed. 885). The decision of April 30, 1923, by our highest judicial tribunal, forbids further court action by the association.

Extension of payments.—The act of February 28, 1923 (42 Stat. 1324), authorizes the Secretary in his discretion to make certain extensions of time to water users within which to make payment of water charges. Regulations under this act were approved by the department March 7, 1923, and are contained in C. L. 1197.

WATER RIGHTS.

Waste water.—About one-half of the water in Elgin Canyon Creek, which flows through the Okanogan Federal irrigation project in Washington, is waste water from that project and comes from another watershed by artificial means. The supreme court of the State of Washington in Eglin *v.* Weatherstone (212 Pac. 562) holds that such water is vagrant waste water, does not become a part of the natural flow of Elgin Canyon Creek after entering it, and may be used by the first person taking it from the stream, but that use of such water in one year does not give the user a right to it a second year, the vagrant waste waters of yesterday not being those of to-day.

Interstate streams.—One June 5, 1922, in the case of Wyoming *v.* Colorado (259 U. S. 419) the United States Supreme Court rendered an opinion in which the rights to the use of the waters of the Laramie River, were adjudicated. The Laramie is an innavigable stream which has its source in the mountains of northern Colorado, flows northerly in that State and crosses into Wyoming. The court found in this case that as between appropriators from the same stream, but in different States recognizing the doctrine of appropriation, the rule of priority has the same application to a stream flowing from one State to another that it has to streams wholly within one of them.

ENGINEERING DATA FOR PROJECTS ON COMPLETION.

[The following tables of data for projects on completion, covering reservoirs, storage dams, diversion dams, and irrigable area, are necessarily subject to some revision as the projects develop and more detailed plans are prepared. In so far as they refer to works yet to be built or areas not yet covered by canal, they are not to be taken as guaranteeing that such work will ever be done. All future work depends on appropriations therefor by Congress.]

Engineering data for projects when completed.

RESERVOIRS.

Projects.	Name.	Area.	Capacity.	Spillways.			
				Length.	Elevation above stream bed.	Capacity.	
						Normal.	Maximum.
		Acres.	*Acre-feet.*	*Feet.*	*Feet.*	*Sec.-ft.*	*Sec.-ft.*
Arizona: Salt River	Roosevelt	18,100	1,575,000	420	240	113,000	150,000
California: Orland	East Park	1,850	51,000	415	88	8,000	12,000
Colorado: Uncompahgre	Taylor Park	2,260	106,000	[1]	[1]	[1]	[1]
Idaho:							
Boise	Deer Flat	9,835	177,000	None.			
Do	Arrowrock	2,860	280,000	402	247	15,000	40,000
Minidoka	Lake Walcott	11,850	[2] 150,000	2,385	42	40,000	60,000
Do	Jackson Lake	25,540	847,000	160	41	7,500	13,000
Montana:							
Milk River	St. Mary Lakes	6,910	124,000	500	20	[3] 500	20,000
Do	Sherburne Lakes	2,000	78,000	160	68	[3] 200	8,000
Do	Nelson Reservoir	4,560	68,500	[4]	[4] 23		
Do	Point of Rocks	180	830	740	8	[3] 0	700
Do	Beaver Creek	5,800	50,000	238	39	[3] 100	15,000
Do	Chain Lakes	9,400	244,000	[5] 300	58	[3] 300	10,000
Sun River	Willow Creek [6]	2,696	86,000	200	100	725	[1]
Do	Beaver Creek [7]	1,360	105,000	275	190		42,500
Do	Pishkun Reservoir [8]	1,542	45,700	Under	control.		
Do	Muddy Creek	1,828	33,000		80	284	[1]
Do	Benton Lake	9,300	144,000	Under	control.		
Nebraska-Wyoming:							
North Platte	Pathfinder	22,700	1,070,000	605	184	40,000	
Do	Lake Alice	900	11,400	100	18	2,500	
Do	Lake Minatare	2,240	60,760	100	55	2,000	
Do	Winters Creek Lake	360	3,000	None.			
Do	Guernsey	2,336	72,700	300	80	27,500	50,000
Nevada: Newlands	Lake Tahoe	120,000	120,000	85	6	525	575
Do	Lahontan	10,000	273,600	500	112	18,800	30,000
Do	Spanish Springs	9,400	300,000	60	96	1,600	1,600
New Mexico: Carlsbad	Avalon	970	7,000	1,026	21	86,000	120,000
Do	McMillan	6,600	45,000	1,750	26.1-24.9	34,500	60,000
New Mexico-Texas: Rio Grande.	Elephant Butte	40,080	2,638,000	275	193	8,000	16,000
Oregon: Umatilla	Cold Springs	1,500	50,000	330	90	6,000	6,000
Do	McKay	1,600	75,000	120	140	10,000	10,000
Oregon-California: Klamath.	Upper Klamath Lake.	60,000	400,000	None.			
Do	Clear Lake	25,000	462,000	357	24	10,000	30,000
Do	Gerber	3,700	90,000	150	63		10,000
South Dakota: Belle Fourche.	Belle Fourche	8,010	203,000	314	100	2,000	2,000
Utah: Strawberry Valley.	Strawberry Valley	8,370	250,000	58	61	500	2,000
Washington:							
Okanogan	Salmon Lake	240	10,500	Siphon.	48		400
Do	Conconully	460	14,400	180	58	4,500	16,000
Yakima	Bumping Lake	1,300	34,000	235	36		6,000
Do	Lake Clealum	4,680	501,000	420	112		18,000
Do	Lake Kachess	4,540	210,000	250	53		7,200
Do	Tieton	2,500	202,500	390	206		50,000
Do	Lake Keechelus	2,550	152,000	300	60		10,000
Do	Clear Creek	270	5,830	261	58		
Wyoming: Riverton	Pilot Butte	882	30,000	100			500
Do	Bull Lake	3,100	145,000	170	67	4,000	8,000
Shoshone	Shoshone	6,600	456,600	300	233	11,000	30,000
Do	Ralston	200	2,100				
Do	Deaver	80	680	None.			

[1] Undetermined.
[2] 95,180 acre-feet only available; above fixed crest of spillway.
[3] Average flow of stream on which reservoir is located.
[4] No spillways: drainage limited; elevation is that of water surface.
[5] Consists of 8 siphons each 5 feet high and 10 feet wide at throat.
[6] Present capacity 16,700 acre-feet.
[7] Tentative.
[8] Present capacity 3,523 acre-feet.

Engineering data for projects when completed—Continued.

RESERVOIRS.

Projects.	Name.	Area.	Capacity.	Spillways.			
				Length.	Elevation above stream bed.	Capacity.	
						Normal.	Maximum.
INDIAN PROJECTS.							
Montana:		*Acres.*	*Acre-feet.*	*Feet.*	*Feet.*	*Sec.-ft.*	*Sec.-ft.*
Blackfeet	Two Medicine Lake	854	16,000	66	25½	[3] 350	6,000
Do	Spring Lake	1,670	29,000	.....	35	.....	.....
Do	Four Horns	1,130	30,000	.....	[4] 45	.....	.....
Do	Guardipee	1,260	30,000	.....	[4] 40	.....	.....
Flathead	Dry Fork	330	[7] 3,400	250	28	500	1,500
Do	Horte	73	[8] 260	40	17	140	300
Do	Hubbart	400	12,000	265	95	5,000	5,000
Do	Kickinghorse	675	6,800	.....	[4] 23	.....	.....
Do	Little Bitterroot Lake	3,000	[8] 18,000	.....	[4] 3	.....	.....
Do	Lower Crow Creek	300	9,485	100	82	600	1,500
Do	McDonald Lake	220	[9] 10,600	100	51	4,000	6,000
Do	Mission	300	8,300	100	74	1,200	3,000
Do	Ninepipe	1,630	[10] 15,100	.....	[4] 30	.....	.....
Do	Pablo	2,100	[11] 29,600	.....	[4] 36	.....	.....
Do	Polson	70	1,700	.....	[4] 80	.....	.....
Do	Tabor	300	[12] 22,000	50	42	400	1,200
Do	Twin	70	937	.....	[4] 25	.....	.....
Fort Peck	Little Porcupine	390	3,900	.....	[4] 14	.....	.....
Do	Big Porcupine	400	3,800	[1] 100	25	750	3,500
Do	Poplar River	3,700	50,000	(1)	.....	.....	.....
Do	Wolf Creek	350	4,550	(1)	.....	.....	.....
Do	Smoke Creek	300	5,300	(1)	.....	.....	.....
Total		488,561	12,371,832	.....	.....	.....	.....

STORAGE DAMS.

Projects.	Name.	Type.	Maximum height.	Crest length.	Volume.
			Feet.	*Feet.*	*Cubic yds.*
Arizona: Salt River	Roosevelt [8]	Rubble masonry arch, gravity.	280	1,125	342,325
California: Orland	East Park [8]	Concrete arch, gravity	139	250	12,200
Colorado: Uncompahgre.	Taylor Park	Undetermined	(13)	(13)	(13)
Idaho:					
Boise	Upper Deer Flat [8]	Earth fill	70	4,000	1,190,275
Do	Lower Deer Flat [8]	.....do	40	7,200	1,207,606
Do	Deer Flat Forest [8]	.....do	16	950	22,500
Do	Arrowrock [8]	Rubble concrete arch, gravity.	349	1,100	585,130
Minidoka	Minidoka [8]	Rock fill, concrete core	86	937	242,500
Do	Jackson Lake [3]	Massive concrete gate section and earth fill.	67	4,450	345,400
Montana:					
Milk River	St. Marys Lake	Earth embankment	30	2,000	135,000
Do	Sherburne Lakes [14]	.....do	83	1,133	201,500
Do	Nelson Reservoir [8]	.....do	28	9,900	175,000
Do	Point of Rocks [8]	.....do	12.5	2,680	31,000
Do	Beaver Creek	.....do	49	6,000	658,000
Do	Connolly	.....do	68	3,125	2,010,000
Sun River	Willow Creek [15]	Earth fill	110	1,045	452,000
Do	Beaver Creek [5]	Masonry	205	820	195,000
Do	Pishkun [16]	Earth fill	48	8,600	444,000
Do	Muddy Creek	.....do	90	800	440,000
Do	Benton Lake	.....do	40	240	12,000

[1] Undetermined.
[3] Average flow of stream on which reservoir is located.
[4] No spillways; drainage limited; elevation is that of water surface.
[5] Tentative.
[6] Elevation above outlet.
[7] Present capacity, 2,000 acre-feet Completed.
[9] Present capacity, 8,200 acre-feet.
[10] Present capacity, 5,500 acre-feet.
[11] Present capacity, 12,000 acre-feet.
[12] Present capacity, that of natural lake, 12,300
[13] Not designed.
[14] First development completed.
[15] Completed to height of 75 feet
[16] Completed to height of 19 feet

Engineering data for projects when completed—Continued.

STORAGE DAMS—Continued.

Projects.	Name.	Type.	Maximum height.	Crest length.	Volume.
			Feet.	*Feet.*	*Cubic yds.*
Nebraska-Wyoming: North Platte.	Pathfinder [8]	Broken range masonry arch.	218	432	60,210
Do	Pathfinder Dike [8]	Earth fill	40	1,650	152,000
Do	Upper Lake Alice [8]	do	30	3,100	240,000
Do	Lower Lake Alice [8]	do	23	2,550	119,000
Do	Minatare [8]	do	65	3,700	570,000
Do	Guernsey	Earth and rock fill	97	575	332,000
Nevada: Newlands	Lake Tahoe [8]	Concrete sluiceway regulator.	14	109	425
Do	Lahontan [8]	Earth and gravel fill with concrete spillways.	124	1,400	770,000
Do	Spanish Springs	do	112	2,815	1,700,000
New Mexico: Carlsbad	Avalon [8]	Earth and rock fill, concrete core.	50	1,380	168,773
Do	McMillan [8]	Earth and rock fill	55	2,070	150,744
New Mexico-Texas: Rio Grande.	Elephant Butte [8]	Rubble concrete, gravity	306	[17] 1,155	[18] 605,200
Do	Elephant Butte Dike [8]	Earth and rock fill	42	2,000	179,000
Oregon: Umatilla	Cold Springs [8]	do	98	3,800	789,500
Do	McKay	Earth and gravel fill	160	2,600	2,300,000
Oregon-California: Klamath.	Clear Lake [8]	Rock fill	33	790	56,600
Do	Link River [8]	Concrete	22	435	2,200
Do	Gerber	Concrete arch	85	470	9,500
South Dakota: Belle Fourche.	Belle Fourche [8]	Earth fill	122	6,200	1,600,000
Utah: Strawberry Valley.	Indian Creek Dike [8]	Earth fill, reinforced concrete	37	1,311	101,107
Do	Strawberry Dam [8]	Earth fill, reinforced concrete core wall.	72	488	108,415
Washington:					
Okanogan	Salmon Lake [8]	Earth embankment	42	1,260	194,288
Do	Conconully [8]	Hydraulic earth fill	67	1,000	354,242
Yakima	Bumping Lake [8]	Earth fill	45	3,425	247,700
Do	Lake Cle Elum [19]	Earth and gravel fill	125	700	462,000
Do	Lake Kachess [8]	do	63	1,400	193,300
Do	Tieton	Earth and rock fill, concrete core wall.	244	905	1,850,000
Do	Lake Keechelus [8]	Earth and gravel fill	70	6,500	639,000
Do	Clear Creek [8]	Single concrete arch	84	404	4,100
Wyoming: Riverton	Pilot Butte	Earth embankment	40	2,400	130,000
Do	Bull Lake	do	75	3,300	600,000
Shoshone	Shoshone [8]	Rubble concrete arch	328	200	78,576
Do	Ralston [8]	Earth fill	50	150	24,740
Do	Deaver	do	14	1,300	30,300
INDIAN PROJECTS.					
Montana:					
Blackfeet	Two Medicine [20]	Earth embankment	37	900	28,600
Do	Spring Lake	do	45	1,625	156,000
Do	Four Horns [21]	do	55	1,650	46,000
Do	Guardipee	do	50	613	35,000
Flathead	Dry Fork [22]	Earth	33	3,250	118,500
Do	Horte [8]	do	16	930	3,800
Do	Hubbart	Concrete arch	130	500	16,000
Do	Kickinghorse	Earth	31	3,700	181,000
Do	Little Bitterroot [8]	do	10	800	8,000
Do	Lower Crow Creek	do	92	860	330,000
Do	McDonald Lake [23]	do	57	1,600	214,000
Do	Mission	do	80	2,500	346,000
Do	Ninepipe [24]	do	38	2,180	162,000
Do	Pablo [25]	do	46	14,000	1,028,000
Do	Polson	do	85	1,100	170,000
Do	Tabor	Loose rock and earth	58	2,200	140,000
Do	Twin	Earth	30	1,600	46,000
Fort Peck	Frazer [8]	Earth fill	17	4,200	43,400
Do	Big Porcupine	do	30	1,500	118,000
Do	Poplar River	do	51	5,200	1,500,000
Do	Wolf Creek	do	36	800	85,300
Do	Smoke Creek	do	48	1,600	76,000
Total					28,375,956

[8] Completed.
[17] Including spillway and approaches, 1,675 feet.
[18] Including spillway, 619,000 cubic yards.
[19] Present development, rock-fill timber crib; height, 11 ft.; volume, 1,500 cubic yards.
[20] Completed, except automatic crest.
[21] Completed for 4,000 acre-feet.
[22] First development; 83,500 cubic yards, 2,000 acre-feet.
[23] First development, 114,000 cubic yards; 8,200 acre-feet.
[24] First development, 64,191 cubic yards, 5,000 acre-feet.
[25] First development, 318,435 cubic yards; 12,000 acre-feet.

Engineering data for projects when completed—Continued.

DIVERSION DAMS.

Projects.	Name.	Type.	Maximum height.	Crest length.	Volume.
			Feet.	*Feet.*	*Cubic yds.*
Arizona: Salt River..	Granite Reef [8]	Rubble concrete weir	38	1,000	40,000
Do	Power Canal [8]	....do	12 ¾	400	4,800
Do	Joint Head [8]	Concrete weir	10	600	1,740
Arizona - California: Yuma.	Laguna [8]	Indian weir, concrete and rock fill.[27]	10	4,780	441,732
California: Orland...	South Canal [8]	Concrete on piling, with rock fill.	20	900	2,886
Do	North side [8]	Concrete weir, with removable timber crest.	8	360	270
Do	East Park Feed Canal.[8]	Concrete arch	44	154	1,777
Colorado:					
Grand Valley....	Colorado River Diversion.[8]	Masonry ogee weir with roller crest 10 to 15 feet high.	24	546	25,682
Uncompahgree...	Gunnison [8]	Crib with rock fill and movable flashboards.	15 ¾	237	3,200
Do	Montrose and Delta [8]	Timber weir with concrete apron sluiceway and cutoff wall.	6.8	68½	172
Do	Loutsenhizer [8]	Pile and timber weir	8	100	.....
Do	Selig [8]	Pile and timber weir with concrete sump.	6	95½	205
Do	Ironstone [8]	Pile foundation with timber deck and needle flashboards.	8 ½	58½	.....
Do	East [8]	Pile and timber weirs, movable flashboards.	([28])	144	.....
Do	Garnet [8]	Rock baskets, faced and surfaced with concrete.	6 ½	75	500
Idaho:					
Boise	Boise River [8]	Rubble concrete weir	45	[29] 246	21,750
Do	Black Canyon [19]	Concrete masonry	168	1,075	90,000
Minidoka	Minidoka [8]	Combined diversion and storage dam. (See Storage.)	.....	.....	.....
Montana:					
Milk River	Swift Current [8]	Earth and timber crib	13	2,800	86,700
Do	St. Mary [8]	Concrete	6.5	198	480
Do	Chinook [30]	.....	.....	.....	.....
Do	Dodson [8]	Timber crib rock filled, concrete abutments, movable crest.	25	319	12,000
Do	Vandalia [8]	Reinforced concrete, automatic movable crest.	34	1,500	11,000
Sun River	Sun River [8]	Concrete masonry	132	212	6,200
Montana-North Dakota: Lower Yellowstone.	Lower Yellowstone [8]	Rock-filled, timber weir	12	700	14,500
Nebraska-Wyoming: North Platte.	Whalen [8]	Concrete weir	29	300	80,740
Do	Horse Creek [8]	....do	12	100	220
Nevada: Newlands...	Truckee River [8]	16 concrete sluiceways	22	171	3,322
Do	Carson River [8]	23 concrete sluiceways	20	240	2,707
New Mexico: Carlsbad.	Avalon [8]	Combined storage and diversion. (See Storage.)	.....	.....	.....
New Mexico-Texas: Rio Grande.	Leasburg [8]	Rubble concrete weir	10.8	600	2,413
Do	Mesilla [8]	....do	16.7	303	2,876
Do	Mexican [31]	Rubble masonry	4.7	320	1,200
Do	Percha [8]	Rubble concrete	17	350	4,346
Oregon: Umatilla....	Feed Canal (Echo) [8]	Concrete weir on timber crib	2 ½	400	296
Do	Maxwell Canal [8]	....do	2.3	175	43
Do	Three-Mile Falls [8]	Concrete multiple arch	24	800	4,160
Oregon - California: Klamath.	Lost River [8]	Hollow reinforced concrete	40	290	5,550
Do	Lower Lost River [19]	Reinforced concrete	15	204	625
Do	Malone [8]	Earth, with concrete spillway.	30	515	18,500
South Dakota: Belle Fourche.	Diversion [8]	Concrete weir	23	400	12,149
Utah: Strawberry Valley.	Spanish Fork [8]	....do	16	70	1,262
Do	Indian Creek Crossing [8]	Earth	17	1,300	15,183

[8] Completed.
[19] Under construction.
[27] Maximum height 40 feet from bottom of sheet piling to top of dam; water raised 10 feet.
[28] Two weirs, one 6 feet by 72 feet, the other 6 feet 10 inches by 72 feet.
[29] Length, including logway.
[30] Will be constructed by irrigation districts. No data available as to type and dimensions.
[31] Constructed by Mexican authorities and used jointly.

Engineering data for projects when completed—Continued.

DIVERSION DAMS—Continued.

Projects.	Name.	Type.	Maximum height.	Crest length.	Volume.
Washington:			*Feet.*	*Feet.*	*Cubic yds.*
Okanogan	Salmon Creek [8]	Concrete weir	4½	50	132
Yakima	Sunnyside [8]	Concrete ogee weir	8½	500	2,291
Do	Tieton Diversion [8]	Concrete and rock-filled crib.	3	110	334
Wyoming:					
Riverton	Wind River [8]	Concrete weir with earth embankment.	37	2,285	123,850
Shoshone	Corbett [8]	Reinforced concrete weir	18	400	4,951
Do	Willwood [8]	Concrete gravity, with ogee weir section.	69.5	320	22,119
INDIAN PROJECTS.					
Montana:					
Blackfeet	Two Medicine	Brush and rock	4	165	175
Do	Blacktail [8]	Concrete	14	54	290
Do	Badger, Birch, and Cut Bank.	Not yet designed			
Flathead	Jocko River	Concrete [13]			
Do	North Fork Jocko River.	do	18	100	900
Do	Middle Fork Jocko River.	do.[13]			
Do	Camas A [8]	Arched masonry	25	125	500
Do	Mud Creek [8]	Concrete	12	18	116
Do	Crow Creek [8]	do	13	82	330
Do	Post Creek—Kicking-horse Feeder.[8]	Log crib, rock filled	7	110	1,500
Do	Post Creek—Pablo Feeder.	Concrete [13]			
Do	Mission Creek [8]—B Lateral.	Log apron	3	8	
Do	Mission Creek [8]—Pablo Feeder.	Concrete	11	60	135
Do	Dry Creek [8]	do	10	25	95
Do	Other small creeks	do			
Fort Peck	Little Porcupine [8]	Concrete weir on timber crib.	4	150	250
Do	Poplar River [8]	do	4	300	180
Do	Big Porcupine [8]	do	6	150	185
Do	Big Muddy	Concrete	17	72	340
Total					1,079,859

[8] Completed. [13] Not designed. [19] Under construction.

IRRIGABLE AREA, PRESENT STATUS.

State, project, and division.	Public land.			State land unsold.	Indian land.	Private land.		Total.
	Entered.	Open.	Withdrawn.			Railroad, unsold.	Other.	
Arizona:	*Acres.*	*Acres.*	*Acres.*	*Acres.*	*Acres.*	*Acres.*	*Acres.*	*Acres.*
Salt River	16,170						197,000	213,170
Gravity system							183,247	183,247
Pumping system	16,170						13,753	29,923
Arizona-California: Yuma	17,493	853	33,284		8,200		50,170	110,000
Arizona—								
Valley	6,070		1,000				42,930	50,000
Mesa	5,223	853	31,884				7,040	45,000
California—Reservation	6,200		400		8,200		200	15,000
California:								
Orland—Main							[1] 20,665	[1] 20,665
Colorado:								
Grand Valley	13,442	403	12,310				28,845	55,000
Garfield gravity	10,912	403	8,280				15,405	35,000
Garfield pumping	2,530		4,030				3,440	10,000
Orchard Mesa pumping							10,000	10,000
Uncompahgre	19,543	1,364	673				75,830	97,410
South Canal system	2,330	306	37				6,339	9,012
West Canal system	2,286	10	12				4,033	6,341
Montrose and Delta canal system	5,376	70	31				23,257	28,734
Loutsenhizer canal system	230						6,463	6,693
Selig Canal system	4,229	511	479				7,433	12,652
Ironstone Canal system	1,203	65	20				16,752	18,040
East Canal system	3,881	402	94				8,877	13,254
Garnet Canal system	8						2,676	2,684

[1] Includes 320 acres of vested rights and 171 acres of town and school sites.

Engineering data for projects when completed—Continued.

IRRIGABLE AREA, PRESENT STATUS—Continued.

State, project, and division.	Public land.			State land unsold.	Indian land.	Private land.		Total.
	Entered.	Open.	Withdrawn.			Railroad, unsold.	Other.	
Idaho:	*Acres.*	*Acres.*	*Acres.*	*Acres.*	*Acres.*	*Acres.*	*Acres.*	*Acres.*
Boise	67,468	.....	5,560	5,980	.....	.....	274,933	353,941
Arrowrock (Idaho)	66,229	.....	.....	60	.....	.....	203,742	270,031
Arrowrock (Oregon)	1,239	.....	.....	.....	.....	.....	5,697	6,936
Notus	.....	.....	.....	.....	.....	.....	6,874	6,874
Hillcrest	.....	.....	2,230	.....	.....	.....	11,870	14,100
Black canyon	.....	.....	3,330	5,920	.....	.....	46,750	56,000
King Hill	516	71	6	400	.....	.....	15,830	16,823
Minidoka	96,258	449	106,840	8,467	.....	.....	24,548	236,562
Gravity	66,000	449	.....	305	.....	.....	5,848	72,602
Pumping	30,258	.....	.....	322	.....	.....	18,380	48,960
North Side pumping extension	.....	.....	106,840	7,840	.....	.....	320	115,000
Montana:								
Huntley	26,176	.....	2,570	.....	.....	.....	3,727	32,473
Gravity	21,342	.....	1,864	.....	.....	.....	3,727	26,933
Pumping	4,834	.....	706	.....	.....	.....	.....	5,540
Divisions—								
Prior	23,515	.....	1,864	.....	.....	.....	2,947	28,326
Eastern	967	.....	.....	.....	.....	.....	780	1,747
Fly Creek	1,694	.....	706	.....	.....	.....	.....	2,400
Milk River	31,056	.....	16,632	6,194	.....	.....	100,219	154,101
Chinook division	1,941	.....	2,148	1,223	.....	.....	51,919	57,231
Malta division	22,782	.....	13,980	3,768	.....	.....	33,209	73,739
Glasgow division	6,333	.....	504	1,203	.....	.....	15,091	23,131
Sun River	42,348	.....	38,026	9,181	.....	.....	69,296	158,851
Sun River Slope	700	.....	12,900	1,100	.....	.....	2,300	17,000
Big Coulee	.....	.....	.....	356	.....	.....	1,962	2,318
Greenfields	24,734	.....	21,915	4,771	.....	.....	20,701	72,121
Mill Coulee	3,000	.....	3,000	500	.....	.....	2,000	8,500
Fort Shaw	11,914	.....	211	154	.....	.....	1,633	13,912
Vaughn	.....	.....	.....	500	.....	.....	9,500	10,000
Benton	2,000	.....	.....	1,800	.....	.....	31,200	35,000
Montana-North Dakota:								
Lower Yellowstone	13,636	.....	2,412	986	.....	95	42,400	59,529
Montana	.....	.....	.....	.....	.....	.....	.....	39,208
North Dakota	.....	.....	.....	.....	.....	.....	.....	20,321
Divisions—								
Gravity	.....	.....	.....	.....	.....	.....	.....	57,221
Pumping	.....	.....	.....	.....	.....	.....	.....	2,308
Nebraska-Wyoming:								
North Platte	134,886	.....	17,454	9,254	.....	.....	75,339	236,933
Interstate division	83,697	.....	1,443	529	.....	.....	29,264	114,933
Nebraska	81,086	.....	1,143	529	.....	.....	28,985	111,743
Wyoming	2,611	.....	300	.....	.....	.....	279	3,190
Fort Laramie division	44,689	.....	15,511	7,325	.....	.....	39,475	107,000
Nebraska	8,550	.....	7,200	4,000	.....	.....	32,100	51,850
Wyoming	36,139	.....	8,311	3,325	.....	.....	7,375	55,150
Northport division, Nebraska	6,500	.....	500	1,400	.....	.....	6,600	15,000
Nevada: Newlands	82,525	4,112	25,486	.....	23,877	20,000	53,000	159,000
Carson division	28,465	4,112	3,906	.....	4,877	2,500	39,140	83,000
Truckee division	4,060	.....	2,080	.....	.....	2,000	13,860	22,000
Pyramid division	.....	.....	4,500	.....	[3] 19,000	1,500	.....	25,000
Lovelock division	.....	.....	15,000	.....	.....	14,000	.....	29,000
New Mexico: Carlsbad	45	.....	.....	.....	.....	.....	24,946	24,991
New Mexico-Texas:								
Rio Grande	1,500	100	700	1,000	.....	.....	146,700	150,000
New Mexico	1,500	100	700	1,000	.....	.....	82,700	86,000
Texas	.....	.....	.....	.....	.....	.....	64,000	64,000
Divisions—								
Rincon	.....	20	.....	700	.....	.....	15,900	17,000
Leasburg	600	40	640	200	.....	.....	29,950	31,000
Mesilla	900	40	60	100	.....	.....	45,850	47,000
El Paso	.....	.....	.....	.....	.....	.....	55,000	55,000
North Dakota:								
Williston	254	139	.....	23	.....	.....	10,337	10,753
Oregon:								
Umatilla	5,413	.....	2,376	.....	.....	3,319	17,192	28,300
East division	3,030	.....	.....	.....	.....	1,407	12,563	17,000
West division	2,383	.....	2,376	.....	.....	1,912	4,629	11,300

[3] Three thousand acres to be allotted to about 600 Indians; remainder of land to be sold in accordance with act (33 Stat. 225).

Engineering data for projects when completed—Continued.

IRRIGABLE AREA, PRESENT STATUS—Continued.

State, project, and division.	Public land.			State land unsold.	Indian land.	Private land.		Total.
	Entered.	Open.	Withdrawn.			Railroad, unsold.	Other.	
	Acres.	*Acres.*	*Acres.*	*Acres.*	*Acres.*	*Acres.*	*Acres.*	*Acres.*
Oregon-California: Klamath	5,917	.....	20,776	.....	.....	.....	142,704	169,397
Oregon	3,002	.....	1,223	.....	.....	.....	105,171	109,396
California	2,915	.....	19,553	.....	.....	.....	37,533	60,001
Divisions—								
Main	2,732	.....	.....	.....	.....	.....	39,688	42,420
Tule Lake	3,185	.....	20,776	.....	.....	.....	239	24,200
Pumping	.....	.....	.....	.....	.....	.....	20,595	20,595
Langell Valley	.....	.....	.....	.....	.....	.....	22,282	22,282
Bonanza Springs	.....	.....	.....	.....	.....	.....	5,900	5,900
Lower Klamath Lake	.....	.....	.....	.....	.....	.....	[4] 54,000	54,000
South Dakota: Belle Fourche	37,732	117	12,008	667	.....	.....	45,907	96,431
Utah: Strawberry Valley	1,953	.....	.....	.....	.....	.....	53,436	55,389
High Line	1,953	.....	.....	.....	.....	.....	20,917	22,870
Spanish Fork	.....	.....	.....	.....	.....	.....	22,519	22,519
Springville-Mapleton	.....	.....	.....	.....	.....	.....	10,000	10,000
Washington:								
Okanogan	116	.....	.....	.....	.....	.....	7,560	7,676
Gravity	.....	.....	.....	.....	.....	.....	.....	6,501
Pumping	.....	.....	.....	.....	.....	.....	.....	1,175
Yakima	7,358	.....	13,688	5,939	241	21,729	291,032	339,987
Sunnyside	2,627	.....	.....	30	241	.....	104,702	107,600
Tieton	2,048	.....	.....	4	.....	.....	29,948	32,000
Roza	120	.....	1,523	2,067	.....	11,310	43,330	58,350
Moxee	1,663	.....	775	1,332	.....	2,783	30,197	36,750
Kittitas [5]	.....	.....	4,990	1,406	.....	3,936	59,955	70,287
Kennewick	900	.....	6,400	1,100	.....	3,700	22,900	35,000
Wyoming:								
Riverton	.....	.....	69,000	.....	1,000	.....	30,000	100,000
Shoshone	63,265	1,816	60,573	5,399	.....	987	6,960	139,000
Montana	87	.....	.....	4	.....	.....	.....	91
Frannie division	87	.....	.....	4	.....	.....	.....	91
Wyoming	63,178	1,816	60,573	5,395	.....	987	6,960	138,909
Garland division	40,310	646	605	352	.....	.....	1,981	43,894
Frannie division	22,868	1,170	10,556	1,343	.....	987	1,691	38,615
Willwood division	.....	.....	16,312	500	.....	.....	788	17,600
Heart Mountain division	.....	.....	33,100	3,200	.....	.....	2,500	38,800
Total primary projects	635,070	9,424	440,374	53,490	33,318	46,130	1,808,576	3,026,382
INDIAN PROJECTS.								
Montana:								
Blackfeet	.....	.....	.....	.....	107,500	.....	.....	107,500
Cutbank North	.....	.....	.....	.....	9,000	.....	.....	9,000
Cutbank South	.....	.....	.....	.....	18,000	.....	.....	18,000
Two Medicine	.....	.....	.....	.....	44,000	.....	.....	44,000
Badger-Fisher	.....	.....	.....	.....	30,000	.....	.....	30,000
Piegan	.....	.....	.....	.....	3,000	.....	.....	3,000
Birch Creek	.....	.....	.....	.....	3,500	.....	.....	3,500
Flathead	43,008	.....	.....	862	33,225	.....	47,405	124,500
Camas	8,576	.....	.....	.....	337	.....	1,587	10,500
Mission Valley	34,210	.....	.....	862	25,920	.....	41,008	102,000
Jocko	222	.....	.....	.....	6,968	.....	4,810	12,000
Fort Peck	9,713	107	100	80	133,394	.....	10,000	153,394
Little Porcupine	.....	.....	.....	.....	1,865	.....	547	2,412
Poplar	.....	.....	.....	.....	21,300	.....	2,700	24,000
Big Porcupine	.....	.....	.....	.....	3,994	.....	1,400	5,394
Big Muddy	.....	.....	.....	.....	19,100	.....	900	20,000
Missouri	.....	.....	.....	.....	79,535	.....	4,053	83,588
Galpin Bottom pumping	9,713	107	100	80	.....	.....	.....	10,000
Milk River pumping	.....	.....	.....	.....	7,600	.....	400	8,000
Total Indian projects	52,721	107	100	942	274,119	.....	57,405	385,394
Total, all projects	687,791	9,531	440,474	54,432	307,437	46,130	1,865,981	3,411,776

[4] Includes some public land, but distribution not known.
[5] Distribution estimated.

CROP STATISTICS.

Summary of crop reports on Government reclamation projects in 1922—area (acres).[1]

State and project.	Cereals.						Other grain and seed.						Hay and forage.						
	Barley.	Corn, Indian.	Oats.	Rye.	Wheat.	Total.	Alfalfa seed.	Clover seed.	Sorghum (grain.)	Flaxseed.	Millet seed.	Total.	Alfalfa hay.	Clover hay.	Other hay.	Corn fodder.	Other forage.	Pasture.	Total.
Arizona: Salt River	14,775	195	3,381	.....	20,547	38,898	.....	.....	17,497	.....	.....	17,497	47,796	.....	.....	.....	205	16,690	64,691
Arizona-California: Yuma	240	.....	.....	.....	1,030	1,270	16,475	.....	3,470	.....	.....	19,945	22,735	.....	235	.....	.....	5,945	28,915
California: Orland	593	.....	.....	.....	101	694	.....	.....	1,537	.....	.....	1,537	6,063	.....	473	.....	15	4,887	11,438
Colorado:																			
Grand Valley	.....	1,236	680	.....	1,988	3,904	401	.....	.....	.....	.....	401	4,982	.....	47	1,316	989	.....	7,334
Uncompahgre	137	2,062	4,550	4	9,718	16,471	197	72	.....	.....	.....	269	23,280	229	521	294	255	5,877	30,456
Idaho:																			
Boise	3,050	6,990	2,425	190	27,618	40,273	985	5,790	.....	.....	11	6,786	38,654	7,100	70	410	.....	6,100	52,334
King Hill	30	181	115	.....	255	581	113	.....	.....	.....	.....	113	3,474	25	121	10	.....	669	4,299
Minidoka—																			
Gravity division	1,782	1,318	2,867	5	9,950	15,922	155	1,448	.....	.....	.....	1,603	24,178	1,928	154	147	23	4,343	30,773
Pumping division	1,182	60	1,120	.....	9,320	11,682	25	1,120	.....	.....	.....	1,145	15,215	311	.....	19	.....	1,796	17,341
Montana:																			
Huntley	223	425	1,434	4	5,793	7,879	32	120	.....	.....	.....	152	6,167	2	40	64	41	12,850	19,164
Milk River	25	95	723	.....	1,931	2,774	164	.....	.....	83	.....	247	4,365	17	10,610	78	.....	158	15,228
Sun River—																			
Fort Shaw division	70	62	123	.....	675	930	.....	20	.....	.....	.....	20	5,185	27	265	.....	.....	649	6,126
Greenfields division	405	.....	1,127	.....	11,913	13,445	20	.....	.....	80	.....	100	1,484	11	350	.....	.....	234	2,079
Montana-North Dakota: Lower Yellowstone	116	972	1,296	.....	3,317	5,701	72	5	.....	44	.....	121	6,463	160	308	122	1,162	374	8,589
Nebraska-Wyoming:																			
North Platte—																			
Interstate division	3,932	11,614	6,781	352	7,810	30,489	.....	43	.....	.....	26	69	27,662	.....	722	333	40	2,081	30,838
Fort Laramie division	413	3,600	3,900	59	5,839	13,811	.....	.....	5	64	40	109	2,106	.....	744	84	.....	331	3,265
Northport division	188	800	382	.....	477	1,847	.....	.....	.....	.....	.....	.....	157	.....	22	.....	.....	745	924
Nevada: Newlands	437	160	72	.....	2,410	3,079	.....	.....	.....	.....	.....	.....	31,103	.....	114	.....	.....	6,402	37,619
New Mexico: Carlsbad	.....	308	.....	.....	[2] 382	690	1,629	.....	80	.....	.....	1,709	6,492	.....	.....	.....	.....	877	7,369
New Mexico-Texas: Rio Grande	448	10,905	923	.....	7,769	20,045	118	.....	206	.....	.....	324	33,971	.....	1,409	758	42	5,851	42,031
North Dakota: Williston	72	25	86	.....	50	233	.....	.....	.....	.....	.....	.....	552	111	280	73	.....	360	1,376
Oregon: Umatilla	60	123	2	.....	64	249	70	.....	.....	.....	.....	70	10,366	10	73	61	.....	732	11,242
Oregon-California: Klamath	949	.....	984	587	3,637	6,157	.....	.....	.....	.....	.....	.....	15,866	.....	774	.....	.....	9,270	25,910
South Dakota: Belle Fourche	1,284	7,130	5,050	.....	5,482	18,946	883	95	.....	19	.....	997	28,965	214	2,593	103	.....	5,230	37,105
Utah: Strawberry Valley	525	293	1,246	18	6,884	8,966	.....	108	.....	.....	.....	108	11,970	147	665	.....	296	2,490	15,568
Washington:																			
Okanogan	.....	4	.....	.....	.....	4	.....	.....	.....	.....	.....	.....	561	.....	74	14	.....	48	697

Yakima:																			
Sunnyside division	434	4,321	282	44	4,561	9,642	.....	.....	.....	.....	.....	.....	37,176	.....	872	150	445	6,558	45,201
Tieton division	529	750	228	.....	2,052	3,559	.....	.....	.....	.....	.....	.....	11,300	.....	470	52	200	1,830	13,852
Wyoming:																			
Shoshone—																			
Garland division	245	74	1,525	.....	6,840	8,684	73	214	.....	.....	10	297	15,784	107	78	32	.....	2,488	18,489
Frannie division	128	29	728	.....	1,160	2,045	145	622	.....	.....	.....	767	4,374	371	96	.....	.....	1,338	6,179
Total	32,272	53,732	42,030	1,263	159,573	288,870	21,557	9,657	22,795	290	87	54,386	448,446	10,770	22,180	4,120	3,713	107,203	596,432

State and project.	Vegetables and truck.						Fruits and nuts.							
	Beans.	Onions.	Potatoes.		Truck.	Total.	Apples.	Peaches.	Pears.	Prunes.	Citrous fruit.	Small. fruit.	Miscellaneous.	Total.
			White.	Sweet.										
Arizona: Salt River	1,073	.....	1,114	.....	7,247	9,434	.....	.....	.....	.....	2,108	698	1,376	4,182
Arizona-California: Yuma	.....	.....	.....	.....	650	650	.....	.....	.....	.....	.....	35	90	125
California: Orland	.....	.....	.....	.....	173	173	.....	22	.....	183	170	62	1,264	1,701
Colorado:														
Grand Valley	315	.....	771	.....	140	1,226	190	.....	.....	.....	.....	.....	.....	190
Uncompahgre	395	1,019	13,815	.....	469	15,698	1,638	99	8	6	.....	89	.....	1,840
Idaho:														
Boise	55	75	12,000	2	1,915	14,047	1,390	115	30	630	.....	165	.....	2,330
King Hill	.....	2	515	.....	80	597	413	.....	25	8	.....	14	.....	460
Minidoka—														
Gravity division	116	30	6,322	.....	605	7,073	206	.....	.....	.....	.....	48	.....	254
Pumping division	5	4	9,318	.....	304	9,631	.....	.....	.....	.....	.....	.....	.....	.....
Montana:														
Huntley	11	4	149	.....	207	371	.....	.....	.....	.....	.....	.....	.....	.....
Milk River	25	.....	205	.....	34	264	.....	.....	.....	.....	.....	1	.....	1
Sun River—														
Fort Shaw division	.....	.....	329	.....	50	379	.....	.....	.....	.....	.....	.....	.....	.....
Greenfields division	.....	.....	137	.....	27	164	.....	.....	.....	.....	.....	.....	.....	.....
Montana-North Dakota: Lower Yellowstone	84	.....	629	.....	167	880	.....	.....	.....	.....	.....	.....	.....	.....
Nebraska-Wyoming:														
North Platte—														
Interstate division	144	10	13,312	.....	532	13,998	.....	.....	.....	.....	.....	.....	.....	.....
Fort Laramie division	70	55	2,090	.....	125	2,340	.....	.....	.....	.....	.....	.....	.....	.....
Northport division	.....	.....	104	.....	25	129	.....	.....	.....	.....	.....	.....	.....	.....
Nevada: Newlands	.....	.....	870	.....	336	1,206	.....	.....	.....	.....	.....	.....	.....	.....
New Mexico: Carlsbad	.....	.....	.....	7	42	49	.....	.....	.....	.....	.....	.....	28	28
New Mexico-Texas: Rio Grande	1,264	146	2	636	5,554	7,602	732	147	955	.....	.....	84	.....	1,918
North Dakota: Williston	.....	9	70	.....	57	136	.....	.....	.....	.....	.....	.....	.....	.....
Oregon: Umatilla	.....	.....	176	.....	234	410	586	35	7	13	.....	64	5	710

[1] Data are for calendar year (irrigation season) except on Salt River project, where data are for corresponding "agricultural year," October, 1921, to September, 1922.
[2] Wheat and oats.

Summary of crop reports on Government reclamation projects in 1922—area (acres)—Continued.

State and project.	Vegetables and truck.						Fruits and nuts.							
	Beans.	Onions.	Potatoes.		Truck.	Total.	Apples.	Peaches.	Pears.	Prunes.	Citrous fruit.	Small. fruit.	Miscel-laneous.	Total.
			White.	Sweet.										
Oregon-California: Klamath			393		62	455								
South Dakota: Belle Fourche	3		311		171	485								
Utah: Strawberry Valley	51	12	572	2	281	918	62	121		1		31	138	353
Washington:														
Okanogan			27		122	149	4,129	13	62	11		45		4,260
Yakima—														
Sunnyside division	206	55	9,544	209	3,442	13,456	10,203	908	1,541	384		610		13,646
Tieton division	248	76	1,713		200	2,237	7,180	537	1,573			210		9,500
Wyoming:														
Shoshone—														
Garland division	37	5	3,726		197	3,965	18							18
Frannie division			293		62	355								
Total	4,102	1,502	78,507	856	23,510	108,477	26,747	1,997	4,201	1,236	2,278	2,156	2,901	41,51

State and project.	Miscellaneous.					Irrigated—no crop.						Total irrigated.
	Beets, sugar.	Cotton.	Cane.	Other.	Total.	Dupli-cated.	Total cropped.	Young alfalfa.	Young fruit.	Fall plowing.	Miscel-laneous.	Dupli-cated.	
Arizona: Salt River		71,238			71,238	14,020	191,920				11,410		203,330
Arizona-California: Yuma		21,420	15		21,435	18,370	53,970						53,970
California: Orland	3				3	3,746	11,800	822	2,081	629		212	15,120
Colorado:													
Grand Valley	989			2,961	3,950	5,165	11,840	811	18	1,546	332	2,177	12,370
Uncompahgre	1,081			217	1,298	4,332	61,700	2,306	62	2,910	3,141	5,389	64,730
Idaho:													
Boise				130	130	7,400	108,500	1,700	300		1,500		112,000
King Hill							6,050	376	240	267		493	6,440
Minidoka—													
Gravity division	1,945			560	2,505	610	57,520	3,125				345	60,300
Pumping division	3,320				3,320	829	42,290	802	65	142	2,526	535	45,290

Montana:													
Huntley	3,106			31	3,137	11,183	19,520						19,520
Milk River	3				3	367	18,150	57				37	18,170
Sun River—													
Fort Shaw division				15	15		7,470				640		8,110
Greenfields division				12	12		15,800				5		[3] 12,420
Montana-North Dakota: Lower Yellowstone	1,107		75	34	1,216	1,107	15,400				200		15,600
Nebraska-Wyoming.													
North Platte—													
Interstate division	10,614			392	11,006		86,400	6,126			154	5,380	87,300
Fort Laramie division	391		36	148	575		20,100	1,866			100	1,766	20,300
Northport division	578				578	28	3,450			200			3,650
Nevada: Newlands				645	645	159	42,390				2,570		44,960
New Mexico: Carlsbad		28,260	84		28,344	15,759	22,430	240			1,410		24,080
New Mexico-Texas: Rio Grande	43	26,422	2,426	80	28,971	16,481	84,410				5,180		89,590
North Dakota: Williston				13	13	188	1,570	30		17	23	50	1,590
Oregon: Umatilla				24	24	315	12,390	650	47	36	215	68	13,270
Oregon-California: Klamath				428	428		32,950				3,050		36,000
South Dakota: Belle Fourche	324			29	353	966	56,920						[4] 31,150
Utah: Strawberry Valley	4,160			267	4,427		30,340	105	70		305		30,820
Washington:													
Okanogan				64	64	334	4,840	33	402		295		5,570
Yakima—													
Sunnyside division	927			135	1,062	2,247	80,760	1,935	1,264	1,016	11,074	1,049	95,000
Tieton division	50			222	272	3,020	26,400	380	3,190		600	1,870	28,700
Wyoming:													
Shoshone—													
Garland division	947				947		32,400	606	13	205	153	657	32,720
Frannie division	66			8	74		9,420	458		298	318	434	10,060
Total	29,654	147,340	2,636	6,415	186,045	106,626	1,169,100	22,428	7,752	7,266	45,201	20,462	1,202,130

[3] Figures for Greenfields division, Sun River project, are for 186 irrigated farms, which included small tracts farmed without irrigation.
[4] Owing to wet year only about half land in crops received irrigation water.

Summary of crop reports on Government reclamation projects in 1922 [1]*—Total yields.*

State and project.	Cereals.						Other grain and seed.						Hay and forage.					
	Barley.	Corn, Indian.	Oats.	Rye.	Wheat.	Total.	Alfalfa seed.	Clover seed.	Sorghum (grain).	Flaxseed.	Millet seed.	Total.	Alfalfa hay.	Clover hay.	Other hay.	Corn fodder.	Other forage.	Total.
	Bushels.	*Bushels.*	*Bushels.*	*Bush.*	*Bushels.*	*Bushels.*	*Bush.*	*Bush.*	*Bushels.*	*Bush.*	*Bush.*	*Bushels.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Arizona: Salt River	591,000	5,571	158,484	.....	513,675	1,268,730	.....	.....	629,892	.....	.....	629,892	191,184	.....	.....	.....	1,025	192,209
Arizona-California: Yuma	5,295	.....	.....	.....	18,752	24,047	58,044	.....	103,672	.....	.....	161,716	48,333	.....	833	.....	.....	49,166
California: Orland	13,788	.....	.....	.....	2,813	16,601	.....	.....	74,980	.....	.....	74,980	24,563	.....	712	.....	148	25,423
Colorado:																		
Grand Valley	.....	24,595	11,991	.....	30,570	67,156	860	.....	.....	.....	.....	860	13,268	.....	60	2,366	.....	15,694
Uncompahgre	2,971	51,844	119,135	65	226,705	400,720	734	255	.....	.....	.....	989	56,415	324	590	831	2,300	60,460
Idaho:																		
Boise	85,400	356,490	84,875	2,850	883,776	1,413,391	4,039	34,740	.....	.....	242	39,021	177,808	12,070	210	4,510	.....	194,598
King Hill	465	6,350	4,385	.....	4,767	15,967	570	.....	.....	.....	.....	570	14,557	47	221	97	.....	14,922
Minidoka—																		
Gravity division	61,250	44,070	87,687	30	289,077	482,114	420	4,994	.....	.....	.....	5,414	74,286	3,868	262	1,018	386	79,820
Pumping division	24,884	1,537	34,722	.....	266,189	327,332	48	4,265	.....	.....	.....	4,313	39,343	463	.....	189	.....	39,995
Montana:																		
Huntley	6,571	9,164	47,068	128	115,416	178,347	24	982	.....	.....	.....	1,006	14,102	8	26	142	317	14,595
Milk River	400	3,410	11,651	.....	21,757	37,218	154	.....	.....	440	.....	594	7,106	27	6,761	122	.....	14,016
Sun River—																		
Fort Shaw division	1,115	1,395	2,559	.....	8,971	14,040	.....	62	.....	.....	.....	62	7,537	34	246	.....	.....	7,817
Greenfields division	8,017	.....	34,299	.....	225,665	267,981	62	.....	.....	353	.....	415	3,065	20	385	.....	.....	3,470
Montana-North Dakota:																		
Lower Yellowstone	2,461	27,980	45,794	.....	61,282	137,517	280	10	.....	236	.....	526	12,560	309	5,165	331	331	18,696
Nebraska-Wyoming:																		
North Platte—																		
Interstate division	109,542	213,800	158,574	3,579	135,449	621,034	.....	230	.....	.....	259	489	47,097	.....	552	1,520	473	49,642
Fort Laramie division	6,192	87,150	98,230	253	65,011	256,836	.....	.....	15	412	368	795	4,818	.....	616	306	.....	5,740
Northport division	2,193	17,634	11,408	.....	6,075	37,310	.....	.....	.....	.....	.....	.....	247	.....	22	.....	.....	269
Nevada: Newlands	9,912	3,666	1,875	.....	50,333	65,786	.....	.....	.....	.....	.....	.....	95,980	.....	118	.....	.....	96,098
New Mexico: Carlsbad	.....	6,028	.....	.....	[2] 6,065	12,093	3,603	.....	3,030	.....	.....	6,633	16,930	.....	.....	.....	.....	16,930
New Mexico-Texas: Rio Grande	7,848	233,218	25,749	.....	132,997	399,812	341	.....	4,086	.....	.....	4,427	107,928	.....	1,850	1,935	.....	111,713
North Dakota: Williston	2,630	1,180	3,950	.....	897	8,657	.....	.....	.....	.....	.....	.....	1,133	205	350	374	.....	2,062
Oregon: Umatilla	1,775	4,468	100	.....	1,894	8,237	239	.....	.....	.....	.....	239	39,094	30	110	524	.....	39,758
Oregon-California: Klamath	23,975	.....	33,010	4,824	66,676	128,485	.....	.....	.....	.....	.....	.....	43,124	.....	1,886	.....	.....	45,010
South Dakota: Belle Fourche	25,511	177,720	133,261	.....	85,288	421,780	739	200	.....	80	.....	1,019	48,460	212	2,549	219	.....	51,440
Utah: Strawberry Valley	19,609	10,660	50,646	525	199,920	281,360	.....	426	.....	.....	.....	426	35,895	302	1,460	.....	2,343	40,000

Washington:																		
Okanogan		125				125							1,078		93	38		1,209
Yakima—																		
Sunnyside division	11,260	190,073	13,494	736	160,275	375,838							148,919		1,148	563	8,750	159,380
Tieton division	10,730	30,926	7,817		47,467	96,940							34,183		717	161	2,567	37,628
Wyoming:																		
Shoshone—																		
Garland division	7,397	2,024	36,277		147,647	193,345		431		142	573	27,432	60		41	81		27,614
Frannie division	2,103	613	14,512		15,325	32,553	39	596			635	7,285	201		74			7,560
Total	1,044,294	1,511,781	1,231,553	12,990	3,790,734	7,591,352	70,196	47,191	815,675	1,521	1,011	935,594	1,343,730	18,180	27,057	15,327	18,640	1,422,934

State and project.	Fruits and nuts.							
	Apples.	Peaches.	Pears.	Prunes.	Citrus fruit.	Small fruit.	Miscellaneous.	Total.
	Pounds.	*Pounds.*	*Pounds*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*
Arizona: Salt River					14,756,000	4,200,000	6,192,000	25,148,000
California: Orland		58,800		132,200	216,000	59,100	346,460	812,560
Colorado:								
Grand Valley	939,600							939,600
Uncompahgre	13,864,200	347,000	79,350	11,100		320,780		14,622,430
Idaho:								
Boise	12,510,000	1,150,000	240,000	5,040,000		990,000		19,930,000
King Hill	1,091,350		8,220	17,700		4,260		1,121,530
Minidoka—Gravity division	591,750					118,450		710,200
New Mexico-Texas: Rio Grande	674,505	23,500	100,850			71,830		870,685
Oregon: Umatilla	587,100	46,225	1,000	10,400			12,900	657,625
Utah: Strawberry Valley	25,023	711,565		11,000		256,330		1,003,920
Washington:								
Okanogan	51,238,320	94,000	349,350	19,500		239,610		51,940,780
Yakima—								
Sunnyside division	76,446,045	13,487,000	10,702,000	3,810,000		4,870,000		109,315,045
Tieton division	70,708,275	3,325,860	7,158,600			702,360		81,895,095
Wyoming: Shoshone—Garland division	19,500							19,500
Total	228,695,670	19,243,950	18,639,370	9,051,900	14,972,000	11,832,720	6,551,360	308,986,970

[1] Data are for calendar year (irrigation season) except on Salt River project, where data are for corresponding "agricultural year" October, 1921, to September, 1922.
[2] Wheat and oats.

Summary of crop reports on Government reclamation projects in 1922—Total yields—Continued.

State and project.	Vegetables and truck.					Miscellaneous.			
	Beans.	Onions.	Potatoes, white.	Potatoes, sweet.	Total.	Beets, sugar.	Cotton.	Cotton-seed.	Cane.
	Bushels.	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*	*Tons.*	*Pounds.*	*Pounds.*	*Tons.*
Arizona: Salt River	17,883		129,966		147,849			60,552,300	
Arizona-California: Yuma							4,225,000	7,600,000	
California: Orland						70			
Colorado:									
Grand Valley	3,812		105,638		109,450	9,521			
Uncompahgre	5,018	319,338	2,136,100		2,460,456	7,639			
Idaho:									
Boise	605	26,250	3,480,000	410	3,507,265				
King Hill		193	112,233		112,426				
Minidoka—									
Gravity division	2,077	1,972	1,380,280		1,384,329	24,362			
Pumping division	82	620	2,201,125		2,201,827	38,157			
Montana:									
Huntley	839	625	20,218		21,682	34,900			
Milk River	355		28,227		28,582	17			
Sun River—									
Fort Shaw division			51,266		51,266				
Greenfields division			14,749		14,749				
Montana-North Dakota: Lower Yellowstone	981		90,989		91,970	11,950			325
Nebraska-Wyoming:									
North Platte—									
Interstate division	1,383	1,100	1,487,363		1,489,846	142,052			
Fort Laramie division	516	5,784	243,190		249,490	4,240			36
Northport division			5,879		5,879	6,669			
Nevada: Newlands			148,667		148,667				
New Mexico: Carlsbad				722	722		3,200,000	6,400,000	337
New Mexico-Texas: Rio Grande	13,168	10,594	33	69,478	93,273	385	6,049,500	12,658,880	5,997
North Dakota: Williston		2,100	10,540		12,640				
Oregon: Umatilla			19,131		19,131				
Oregon-California: Klamath			38,255		38,255				
South Dakota: Belle Fourche	50		30,270		30,320	3,145			
Utah: Strawberry Valley	594	1,987	79,706	300	82,587	46,615			
Washington:									
Okanogan			3,433		3,433				
Yakima—									
Sunnyside division	5,401	3,702	2,552,319	42,530	2,603,952	4,932			
Tieton division	5,333	11,380	339,825		356,538	705			
Wyoming:									
Shoshone—									
Garland division	492	752	547,448		548,692	10,720			
Frannie division			39,091		39,091	548			
Total	58,589	386,397	15,295,941	113,440	15,854,367	346,627	13,474,500	87,211,180	6,695

Summary of crop reports on Government reclamation projects in 1922[1]*—Total crop values.*

State and project.	Cereals.						Other grain and seed.					
	Barley.	Corn, Indian.	Oats.	Rye.	Wheat.	Total.	Alfalfa seed.	Clover seed.	Sorghum (grain).	Flax-seed.	Millet seed.	Total.
Arizona: Salt River	$332,435	$6,240	$73,536	.....	$616,410	$1,028,621	.....	.....	$393,682	.....	.....	$393,682
Arizona-California: Yuma	3,785	.....	.....	.....	21,416	25,201	522,400	.....	92,125	.....	.....	614,525
California: Orland	8,273	.....	.....	.....	2,954	11,227	.....	.....	93,725	.....	.....	93,725
Colorado:												
Grand Valley	.....	19,655	6,829	.....	24,353	50,837	7,340	.....	.....	.....	.....	7,340
Uncompahgre	1,595	39,585	58,445	$65	179,572	279,262	5,421	$1,994	.....	.....	.....	7,415
Idaho:												
Boise	71,736	160,420	42,438	969	707,020	982,583	29,081	291,816	.....	.....	$181	321,078
King Hill	229	5,848	2,501	.....	3,375	11,953	3,881	.....	.....	.....	.....	3,881
Minidoka												
Gravity division	36,750	44,072	43,844	21	231,262	355,949	2,940	39,950	.....	.....	.....	42,890
Pumping division	14,930	1,537	17,361	.....	212,951	246,779	336	34,120	.....	.....	.....	34,456
Montana:												
Huntley	3,147	6,775	26,900	38	100,320	137,180	168	3,850	.....	.....	.....	4,018
Milk River	160	3,410	5,243	.....	21,322	30,135	2,822	.....	.....	$880	.....	3,702
Sun River—												
Fort Shaw division	781	1,395	1,663	.....	7,625	11,464	.....	469	.....	.....	.....	469
Greenfields division	5,613	.....	22,295	.....	191,817	219,725	937	.....	.....	706	.....	1,643
Montana-North Dakota: Lower Yellowstone	1,084	11,192	11,448	.....	61,282	85,006	3,354	48	.....	495	.....	3,897
Nebraska-Wyoming:												
North Platte—												
Interstate division	52,580	119,780	63,430	1,932	115,132	352,854	.....	1,610	.....	.....	259	1,869
Fort Laramie division	3,096	43,575	39,292	126	52,010	138,099	.....	.....	30	725	368	1,123
Northport division	1,096	8,817	3,993	.....	4,557	18,463	.....	.....	.....	.....	.....	.....
Nevada: Newlands	7,632	4,400	1,172	.....	60,400	73,604	.....	.....	.....	.....	.....	.....
New Mexico: Carlsbad	.....	5,701	.....	.....	[2] 5,652	11,353	25,355	.....	890	.....	.....	26,245
New Mexico-Texas: Rio Grande	6,163	203,905	16,951	.....	154,830	381,859	4,044	.....	2,891	.....	.....	6,935
North Dakota: Williston	1,315	472	1,382	.....	717	3,886	.....	.....	.....	.....	.....	.....
Oregon: Umatilla	1,562	3,842	60	.....	1,894	7,358	3,401	.....	.....	.....	.....	3,401
Oregon-California: Klamath	15,823	.....	19,475	3,183	64,010	102,491	.....	.....	.....	.....	.....	.....
South Dakota: Belle Fourche	11,480	99,526	42,643	.....	76,759	230,408	7,242	1,800	.....	200	.....	9,242
Utah: Strawberry Valley	14,980	5,317	29,031	446	169,931	219,705	.....	2,130	.....	.....	.....	2,130
Washington:												
Okanogan	.....	168	.....	.....	.....	168	.....	.....	.....	.....	.....	.....
Yakima—												
Sunnyside division	6,756	133,051	8,231	589	155,467	304,094	.....	.....	.....	.....	.....	.....
Tieton division	7,511	24,740	4,300	.....	47,467	84,018	.....	.....	.....	.....	.....	.....
Wyoming:												
Shoshone—												
Garland division	3,699	810	18,139	.....	115,166	137,814	.....	1,552	.....	.....	512	2,064
Frannie division	1,052	245	7,256	.....	11,953	20,506	507	2,146	.....	.....	.....	2,653
Total	615,263	954,478	567,868	7,369	3,417,624	5,562,602	619,229	381,485	583,343	3,006	1,320	1,588,383

[1] Data are for calendar year (irrigation season), except on Salt River project, where data are for corresponding "agricultural year," October, 1921, to September, 1922.
[2] Wheat and oats.

Summary of crop reports on Government reclamation projects in 1922—Total crop values.

State and project.	Hay and forage.							Vegetables and truck.					
	Alfalfa hay.	Clover hay.	Other hay.	Corn fodder.	Other forage.	Pasture.	Total.	Beans.	Onions.	Potatoes, white.	Potatoes, sweet.	Truck.	Total.
Arizona: Salt River	$2,294,208				$8,200	$250,365	$2,552,773	$64,380		$233,940		$1,348,784	$1,647,104
Arizona-California: Yuma	676,666		$3,270			158,900	838,836					38,076	38,076
California: Orland	270,195		7,832		1,480	35,294	314,801					13,887	13,887
Colorado:													
Grand Valley	132,680		562	$6,606	1,978		141,826	16,668		35,627		11,331	63,626
Uncompahgre	440,715	$2,194	4,562	2,771	11,690	25,698	487,630	20,688	$125,119	385,300		39,994	571,101
Idaho:													
Boise	1,422,460	96,560	1,680	18,040		122,000	1,660,740	2,178	11,288	348,000	513	314,745	676,724
King Hill	132,240	390	1,147	315		6,955	141,047		380	39,055		6,753	46,188
Minidoka:													
Gravity division	520,004	19,338	1,312	4,072	1,713	53,324	599,763	6,231	1,972	345,070		34,272	387,545
Pumping division	314,744	2,315		756		20,019	337,834	393	620	550,281		18,577	569,871
Montana:													
Huntley	119,620	60	188	782	1,585	30,036	152,271	1,869	1,127	9,992		20,959	33,947
Milk River	71,060	163	74,371	732		1,000	147,326	1,704		13,153		5,845	20,702
Sun River—													
Fort Shaw division	75,448	204	1,941			4,079	81,672			15,495		5,128	20,623
Greenfields division	30,655	160	3,134			1,259	35,208			4,425		4,420	8,845
Montana-North Dakota: Lower Yellowstone	87,921	1,545	25,825	2,317	5,363	3,769	126,740	2,452		22,747		12,742	37,941
Nebraska-Wyoming:													
North Platte—													
Interstate division	376,776		2,760	3,800	1,419	20,810	405,565	3,320	660	185,920		24,760	214,660
Fort Laramie division	48,180		8,624	918		1,655	59,377	1,548	2,314	72,957		6,405	83,224
Northport division	2,256		176			5,936	8,368			2,351		1,658	4,009
Nevada: Newlands	1,530,791		1,298			47,701	1,579,790			89,200		59,610	148,810
New Mexico: Carlsbad	216,343					9,221	225,564				903	2,224	3,127
New Mexico-Texas: Rio Grande	1,739,470		20,490	15,189	843	61,170	1,837,162	47,807	12,754	51	76,962	380,240	517,814
North Dakota: Williston	13,596	2,460	4,038	2,992		3,083	26,169		1,890	5,797		10,395	18,082
Oregon: Umatilla	1,388,987	300	1,210	2,898		18,167	411,562			13,392		26,265	39,657
Oregon-California: Klamath	344,995		15,089			53,305	413,389			17,214		2,976	20,190
South Dakota: Belle Fourche	242,430	1,070	17,547	2,190		36,617	299,854	120		18,162		11,260	29,542
Utah: Strawberry Valley	278,610	2,227	11,473		19,489	13,080	324,879	2,667	1,490	18,024	450	22,598	45,229
Washington:													
Okanogan	16,177		1,400	380		485	18,442			3,090		16,720	19,810
Yakima—													
Sunnyside division	2,010,407		16,072	2,815	52,500	137,718	2,219,512	17,013	1,851	893,311	42,530	473,585	1,428,290
Tieton division	341,830		5,736	483	12,835	27,450	388,334	12,800	6,828	127,435		20,000	167,063
Wyoming:													
Shoshone—													
Garland division	274,320	480	328	810		22,055	297,993	1,772	1,355	136,862		16,390	156,379
Frannie division	72,850	1,608	592			5,542	80,592			9,773		4,705	14,478
Total	14,486,634	131,074	232,657	68,866	119,095	1,176,693	16,215,019	203,610	169,648	3,596,624	121,358	2,955,304	7,046,544

State and subject.	Fruits and nuts.								Miscellaneous.					Grand total.
	Apples.	Peaches.	Pears.	Prunes.	Citrus fruit.	Small fruit.	Miscellaneous.	Total.	Beets, sugar.	Cotton and cotton seed.	Cane.	Other.	Total.	
Arizona: Salt River					$737,800	$297,080	$185,760	$1,220,640		$6,055,230			$6,055,230	$12,898,050
Arizona-California: Yuma						15,000	10,012	25,012		1,136,050	$4,800		1,140,850	2,682,500
California: Orland		$3,715		$9,254	7,740	3,729	107,132	131,570	$350				350	565,560
Colorado:														
Grand Valley	$12,561							12,561	76,168			$13,402	89,570	365,760
Uncompahgre	116,924	4,435	$1,532	332		16,799	4,358	144,380	61,112				61,112	1,550,900
Idaho:														
Boise	156,375	34,500	9,600	75,600		59,400		335,475				16,000	16,000	3,992,600
King Hill	15,662		311	437		421		16,831						219,900
Minidoka—														
Gravity division	11,835					3,553		15,388	146,173			15,602	161,775	1,563,310
Pumping division									267,100				267,100	1,456,040
Montana:														
Huntley									244,310			974	245,284	572,700
Milk River						160		160	85				85	202,110
Sun River—														
Fort Shaw division												612	612	114,840
Greenfields division												429	429	265,850
Montana-North Dakota: Lower Yellowstone									71,706		1,625	7,185	80,516	334,100
Nebraska-Wyoming:														
North Platte—														
Interstate division									894,927			8,575	903,502	1,878,450
Fort Laramie division									26,712		108	3,397	30,217	312,040
Northport division									41,680				41,680	72,520
Nevada: Newlands												47,506	47,506	1,849,710
New Mexico: Carlsbad							1,345	1,345		928,000	2,346		930,346	1,197,980
New Mexico-Texas: Rio Grande	22,200	395	6,239			6,322		35,156	2,482	1,624,448	64,151	9,663	1,700,744	4,479,670
North Dakota: Williston												4,093	4,093	52,230
Oregon: Umatilla	13,503	1,756	50	416		6,634	710	23,069				1,213	1,213	486,260
Oregon-California: Klamath												1,070	1,070	537,140
South Dakota: Belle Fourche									15,725			999	16,724	585,770
Utah: Strawberry Valley	2,327	8,183		110		18,325	3,628	32,573	268,034				268,034	892,550
Washington:														
Okanogan	1,537,150	1,880	7,860	975		11,980		1,559,845				8,875	8,875	1,607,140
Yakima—														
Sunnyside division	1,528,922	269,740	240,795	76,200		183,000		2,298,657	29,592			29,775	59,367	6,309,920
Tieton division	1,590,939	74,832	143,172			42,142		1,851,085	4,230			34,100	38,330	2,528,830
Wyoming:														
Shoshone—														
Garland division	390							390	69,680				69,680	664,320
Frannie division									3,562			309	3,871	122,100
Total	5,008,788	399,436	409,559	163,324	745,540	664,545	312,945	7,704,137	2,223,628	9,743,728	73,030	203,779	12,244,165	50,360,850

CONTRACTS UNDER WARREN ACT.

GRAND VALLEY PROJECT, COLORADO.

Name of contractor.	Date of contract.	Area in acres.	Amount of water.
			Second-feet.
No contracts during past year.			
Total from previous years (3 contracts)		18,400	520

UNCOMPAHGRE PROJECT, COLORADO.

Bell, John C	Apr. 7, 1923	197	3.30
Donley, Fred	Nov. 14, 1922	19	.31
Frasier, Frank F. and Erdie E	Nov. 6, 1922	17	.29
Page, Mary A	May 4, 1923	7	.16
Prottengeier, George S	Mar. 24, 1923	10	.23
Simpson, Minnie Charlton	Oct. 25, 1922	15	.26
Weber, Willis A. and George P	July 3, 1922	45	1.00
Wilson, Laura Tilden	Mar. 2, 1923	12	.20
Total		322	5.75
Total from previous years (9 contracts)		640	11.30
Grand total		962	17.05

BOISE PROJECT, IDAHO.

			Acre-feet.
Lakefork Reservoir Company	June 19, 1922	12,500.00	18,000.00
Total from previous years (16 contracts)		212,960.44	330,847.35
Grand total		225,460.44	348,847.35

MINIDOKA PROJECT, IDAHO.

American Falls.

			Acre-feet.
American Falls Reservoir district	June 15, 1923	394,500	300,000
Empire irrigation district	do	91,000	110,000
Total		485,500	410,000
Total for previous years (21 contracts)		499,569	333,520
Total		985,069	743,520
Less duplications		279,500	143,250
Grand total [1]		705,569	600,270

[1] Construction contracts not to be included in total, as no water delivered.

Jackson Lake.

Murtaugh Canal Co. (assigned to Milner low-lift irrigation district)	July 29, 1922	10,000	15,000
New Sweden irrigation district	Sept. 26, 1922	23,000	12,500
Snake River Valley irrigation district	Feb. 6, 1923	24,000	10,000
Total [2]		57,000	37,500
Total from previous years (16 contracts)		626,840	502,000
Total		683,840	539,500
Less duplications		47,000	
Grand total		636,840	539,500

Temporary rental contracts, season of 1922.

Hansten, Christian	July 1, 1922		100
Henderson, Arch	July 6, 1922		125
Idaho Falls, city of	Aug. 3, 1922		100
do	Aug. 12, 1922		50
Martin, Mrs. Wentla	July 12, 1922		50
Phillips, Thomas	July 20, 1922		55
Rowbury, W. H	July 24, 1922		50
Utah Power & Light Co	July 28, 1922		100
Vance, S. E., jr	July 12, 1922		450
do	July 28, 1922		400
do	Aug. 3, 1922		300
do	Aug. 18, 1922		125
Total			1,905
Grand total		636,840	541,405

[2] Contracts executed so late in season that only 7,000 acre-feet delivered. These contracts provide for use of Jackson Lake water pending completion of American Falls storage and the area and amount of water are included also in the data on American Falls storage.

NORTH PLATTE PROJECT, NEBRASKA-WYOMING.

No contracts during past year.			
Total from previous years (13 contracts)		124,623	344,622.00

KLAMATH PROJECT, OREGON-CALIFORNIA.

Malin irrigation district	Sept. 9, 1922	4,000.00	8,000.00
Shasta View irrigation district	Oct. 6, 1922	4,000.00	8,000.00
Horsefly irrigation district	Oct. 12, 1922	1,500.00	3,637.64
Sunnyside irrigation district	Oct. 24, 1922	789	1,578.00
Total		10,289.00	21,215.64
Total from previous years (6 contracts)		48,377.74	
Grand total		58,666.74	

BELLE FOURCHE PROJECT, SOUTH DAKOTA.

No contracts during past year.			
Total from previous years (2 contracts)		54.8	

STRAWBERRY VALLEY PROJECT, UTAH.

No contracts during past year.			
Total from previous years (8 contracts)		29,060.00	22,135.00

YAKIMA PROJECT, WASHINGTON.

Previous to fiscal year 1923		240,280.00	927,459.00
Benson, Trygve	May 7, 1923	10.00	30.00
Colville, E. F	Apr. 30, 1923	10.00	30.00
Cronkhite, Owen B	Feb. 26, 1923	10.00	30.00
Forquer, G. M	Apr. 23, 1923	10.00	30.00
Foster, Francis W	May 8, 1923	1.50	4.50
Granger irrigation district	Nov. 20, 1922	1,600.00	4,800.00
Irish, G. H	Feb. 27, 1923	10.00	30.00
Matteson, Rebecca B	Apr. 4, 1923	5.00	15.00
Morrison, W. J	Mar. 17, 1923	6.00	18.00
Stevens, J. E	Mar. 15, 1923	10.00	30.00
Thomas, Jesse W	Mar. 17, 1923	18.60	55.80
Zillah irrigation district	Sept. 29, 1922	108.12	324.36
Total		1,799.22	5,397.66
Total from previous years (15 contracts)		240,280.00	927,459.75
Grand total		242,079.22	932,857.41

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